The Mining Journal

Established 1835 — Railway & Commercial Gazette

Vol. CCXLIV No. 6233 — LONDON, FEBRUARY 4, 1955 — PRICE 8d.

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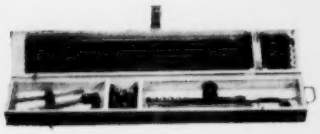

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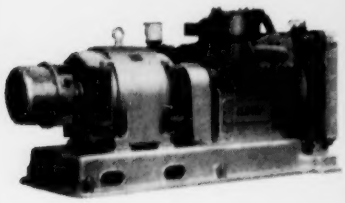

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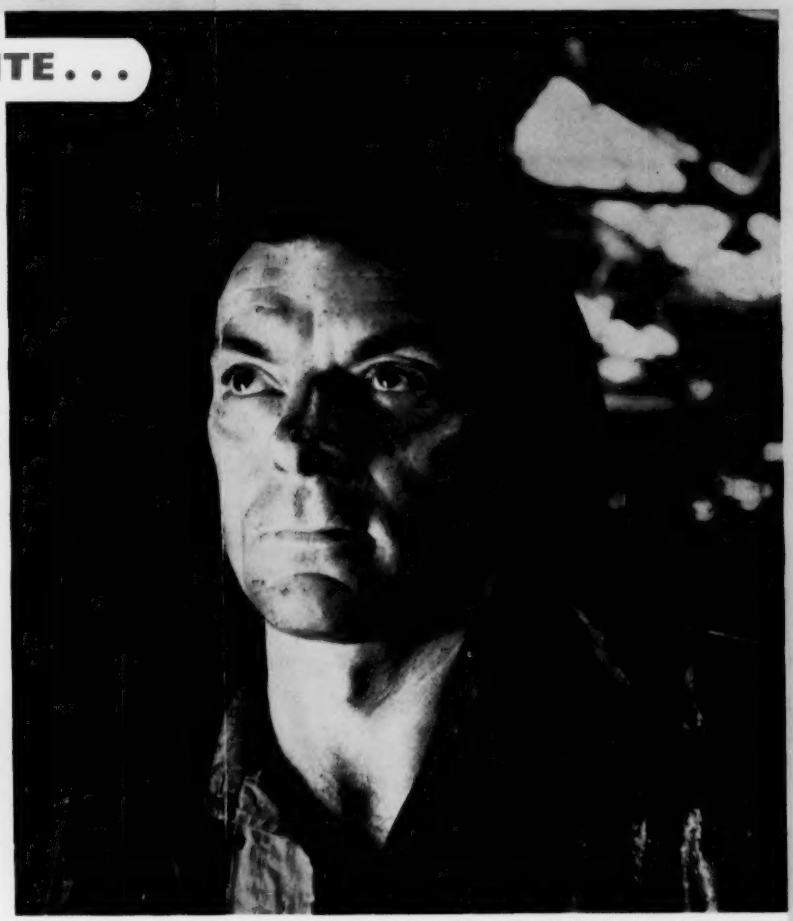

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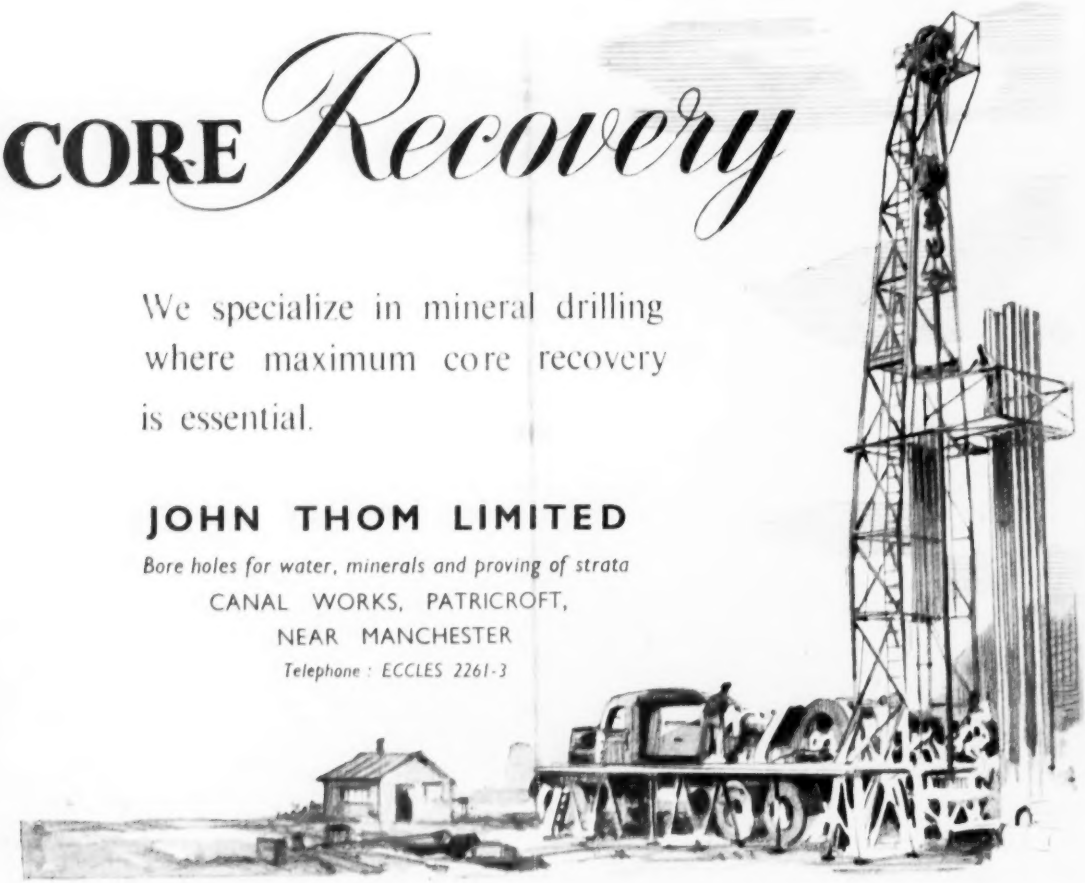

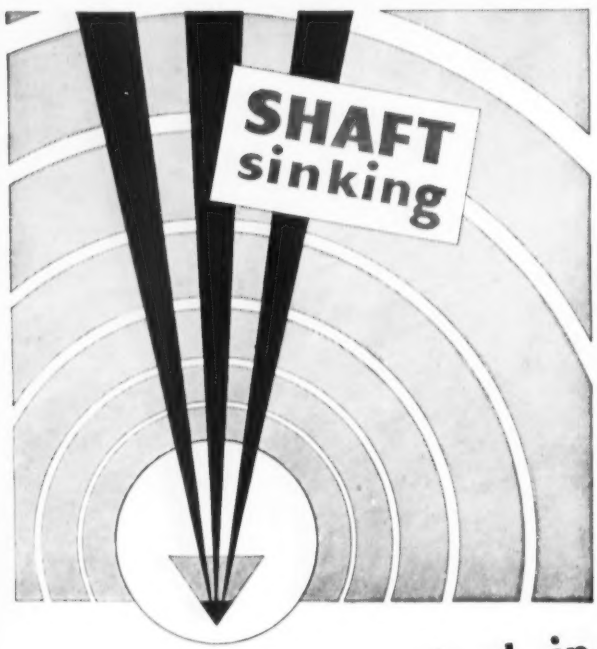

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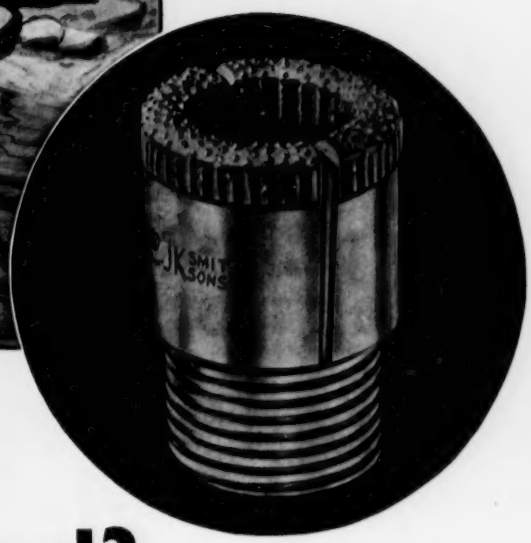

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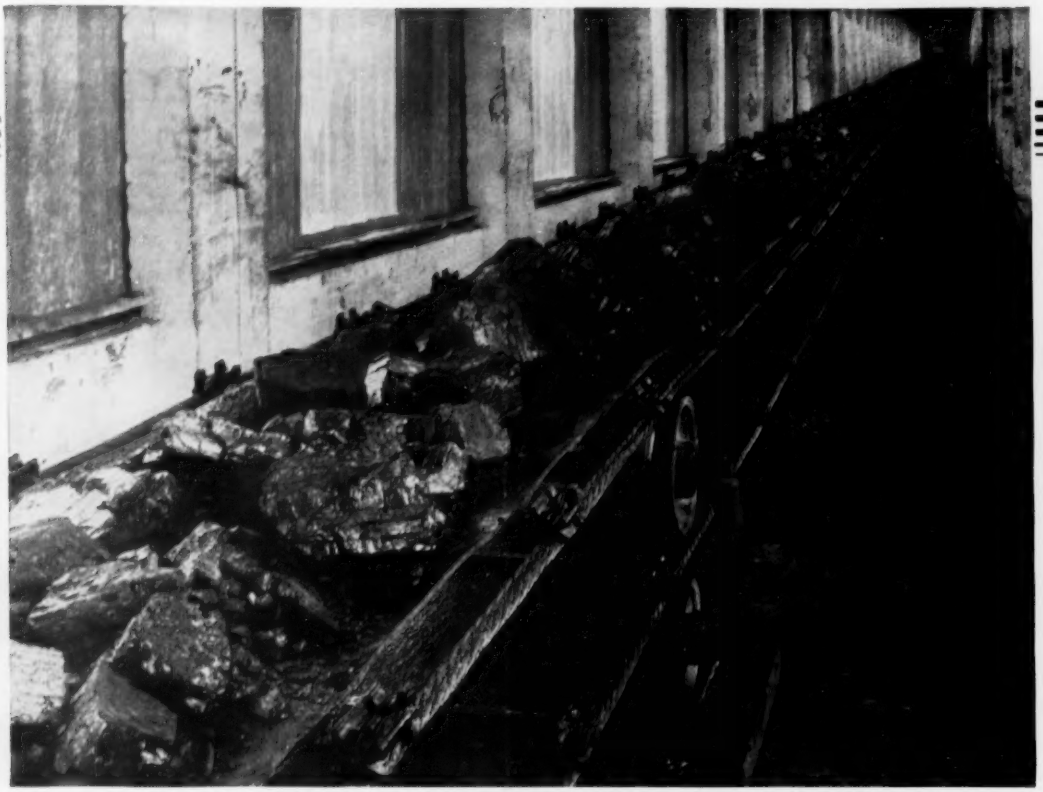

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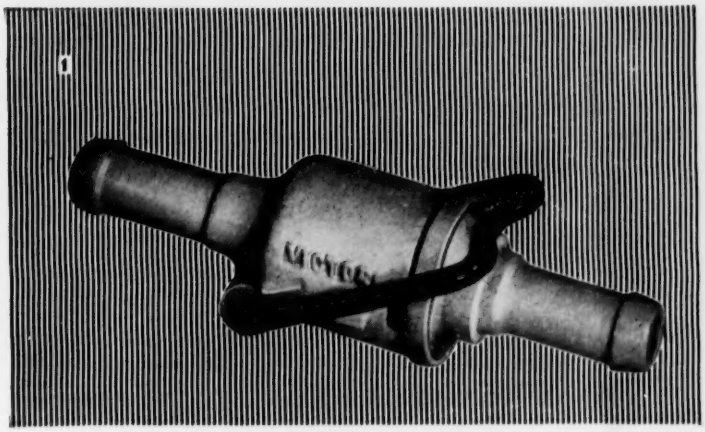

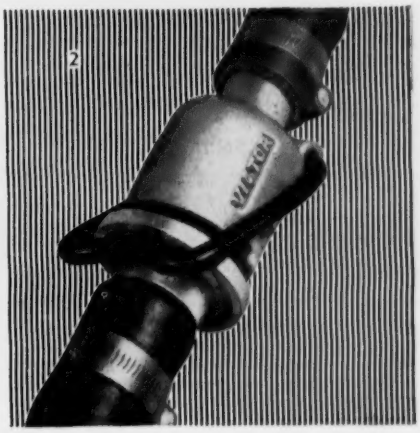

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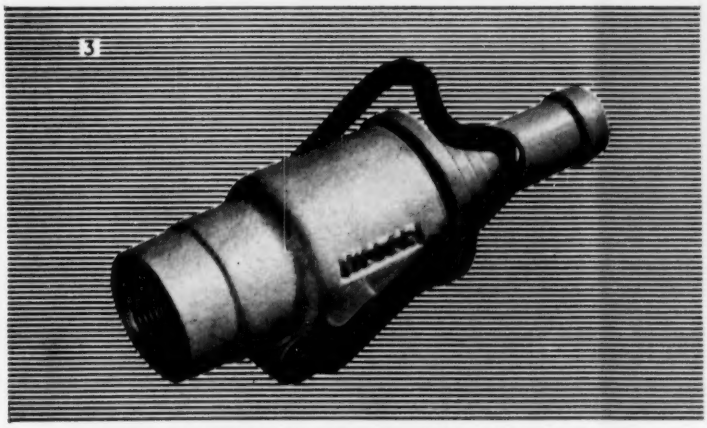

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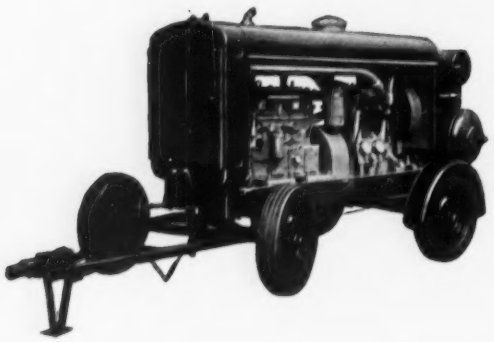

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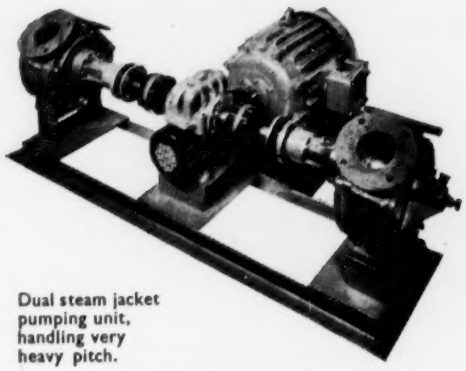

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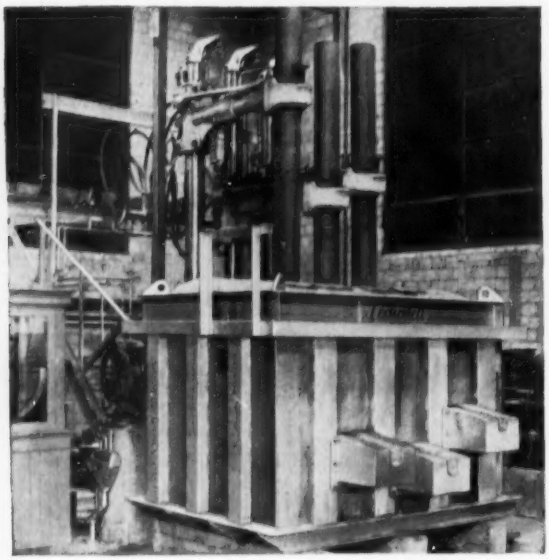

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NOTES AND COMMENTS

Bank Rate and the Commonwealth Conference

It was inevitable that the Commonwealth prime ministers would concern themselves chiefly with political affairs simply because so much has happened since they last met after the Coronation; the end of the Indo-China struggle and the Geneva Conferences, the creation of S.E.A.T.O., the growth of Western preparedness and the approach of German rearmament, the possibility of direct negotiations with Russia, agreement with Egypt on the Canal zone, the growth of a Muslim as distinct from an Arab bloc, the continuing ferment of the African continent, and, overhanging all, the successful testing of the first hydrogen bomb.

In the event, the coincidence of the meeting and of the Formosa crisis has concentrated attention more rigidly on international affairs, for the world looks to the Commonwealth bloc—an amalgam of moderate forces of Asia and the West—to point a way out of the threatening situation. Yet there will be an important place at the conference for economic affairs, and this fact was highlighted by the raising of the Bank Rate to 3½ per cent last week.

It is possible to explain the rise by domestic reasons; first, money market rates have so risen that they were out of line with Bank Rate and an increase was therefore called for to keep the credit structure's shape; secondly, domestic inflation is a threat—though not yet a danger—to which all the Bank chairmen referred in their addresses, and which is best checked in its early stages. Yet these two trends were already observable when the matter was discussed in this column on December 10 and when the conclusion was reached that though the next movement of the Bank Rate would be up, the change was not immediately called for.

Inflation has not shown itself in any other form than in a heavy surplus of vacancies over available labour and even in this respect the situation is not noticeably worse. Nor could the Bank chairman or the F.B.I. logically call for the incentive of income tax relief if they believed the threat of inflation to be really oppressive. Purely domestic explanations, in fact, do not suffice. What has changed since early December is that the weakness of sterling has continued that much longer with a consequent loss from the flight of short term funds and from the sale of tin and other sterling commodities through cheap transferable sterling.

The chief reason for the continued weakness of the pound is undoubtedly the unfavourable trading accounts of the outer sterling area, and particularly India, Australia and New Zealand, and this makes it a rather delicate subject for Mr. Butler to raise. He will be able to raise it with that much more confidence, however, for having first increased Bank Rate and thereby shown his determination to defend the currency. It will still be a difficult subject to discuss as Australia and New Zealand will certainly point out that if the U.K. had bought less farm produce last year in the dollar area and in Europe and more from them, their own accounts would be nearer a balance and the United Kingdom's own dollar and gold expenditure would be that much less. Further, Australia and New Zealand will add that they have no choice, unless some such switch back of United Kingdom buying is made, but to cut imports and particularly imports of United Kingdom manufactures (it is fortunate that the upswing in the present American economy provides the U.K. with an insurance policy against this happening).

The weakness of sterling is not so pronounced as to call for any commonly agreed emergency defence, but the Conference will probably express its general assent to the common interest in maintaining the pound at its present exchange value and in exporting direct to the dollar area as a means of achieving it.

Outlook for New Caledonia's Mining Industry

The economy of New Caledonia is based almost exclusively on its mining industry, with nickel production as the principal prop of prosperity. This is borne out by the fact that of the CFP frs. 1,369,000,000 exportable value in 1953, minerals comprised 88 per cent of the total at CFP frs. 1,201,000,000. The continued modernization of mining methods and the active prospecting being carried out in the territory give rise to the belief that the importance of mining to the national economy will be maintained for a long time to come. Some 627,000 tonnes of ore were mined in the year 1953 to provide approxi-

mately 17,000 tonnes of metal.

The three principal minerals exploited on the island are nickel, chrome and manganese, the latter being of least importance. Société Le Nickel is by far the largest nickel producer, and eight other mines were active in 1953. Their importance in relation to the overall national output may be assessed by the fact that nickel alone was responsible for 59 per cent of the total mineral production of New Caledonia in 1953, a figure which compared with 68 per cent in 1952.

Increased production was reported also in the case of chrome when the 121,000 tonnes produced during 1953 constituted an increase of about 11 per cent over the record output of the previous year. Manganese production, however, did not equal that of 1953, and exhaustion of the more easily worked deposits from opencast operations caused a complete stoppage of production for two months.

In the meantime, research into the possible opportunities afforded by indigenous deposits of thirteen other minerals is continuing. Some of these have been mined in New Caledonia in the past, but the discovery of richer deposits elsewhere in the world has rendered economic exploitation impossible.

Cobalt is a case in point. New Caledonia was one of the major cobalt producers of the world until the discovery of the vast Canadian deposits of even richer grade. The pendulum may swing back for New Caledonia, however, as currently two groups, one Canadian and one French, are investigating deposits of cobalt which, though not rich, may be proved payable by large-tonnage exploitation.

The story of cobalt in New Caledonia serves to illustrate the fate of many others of the island's minerals. The prospects of reviving the copper mining industry are being investigated, and it has been reported that recent borings have given encouraging results, while it is possible that prospecting may be undertaken to obtain more precise information on the extent and payability of alluvial gold deposits. Plans are in hand to prospect for lead and zinc on the perimeter of previous deposits. The phosphate deposits of various islands belonging to the dependancy of New Caledonia probably warrant further examination. Rich iron ores have been worked on the main island in the past, and large tonnages are obtainable, but the chrome and nickel content of the ore renders it unsuitable for industrial use. Coal mining ended in 1930 after nearly 80,000 tonnes had been extracted. New Caledonian coal is of poor quality and unsuitable for coking.

Other recent activities have included a report by the Mining Department of the existence of deposits of antimony and mercury, with traces of molybdenum and some rutile. Prospecting for oil and rutile is being carried out and, although information is scanty at present, the head of the Department of Mines is reported as stating, "The prospects for the next five to ten years are extremely favourable." He added that negotiations were under way for a serious study of the prospects of manganese and tungsten mining and that the Department would not neglect possibilities for the exploitation of antimony, mercury and gold. Research is being undertaken to improve the metallurgical processing of nickel, to render the cobalt deposits payable, and to prospect for copper, lead, zinc and oil.

It is possible therefore that sometime in the future the domestic economy of New Caledonia will no longer depend on any one major product, but will be spread over many minor projects.

The Rhodesias

(From Our Own Correspondent)

Salisbury, January 21, 1955.

On January 20 the Southern Rhodesia government announced a scheme to assist the Colony's smallworkers. Through the Mining Affairs Board it will consider applications for development loans and, in approved cases, will be prepared to write off 50 per cent of the loan should the venture prove unsuccessful. But the Government stresses that only promising ventures will be considered for loans, and that its risk will be limited to £10,000 in any one financial year.

The smallworking industry will welcome this announcement, for it has long been seeking some form of Government aid and, in fact, the Government's action closely follows the lines of a resolution adopted at last year's annual congress of the Rhodesian Mining Federation. There is to be no change in the procedure at present in operation whereby the Mining Affairs Board considers applications for development loans. It is likely, however, that the Board will adopt a more cautious approach to the propositions placed before it.

This month two well-known mines closed down. The closure of the first, the Rezende Gold Mine, did not cause great surprise following continuous intensive pressure bursts in newly-developed areas. Several fatal accidents had taken place as a result of the bursts and the directors' decision to cease all operations follows a full investigation. The Rezende, one of the oldest-producing mines in the Colony, began milling in 1892, produced more than 1,000,000 oz. of gold, and paid out more than £1,000,000 in dividends.

The second closure, that of Divide Chrome Mines, was the result of the absence of contracts for the sale of the mine's chrome, which led to the decision by the directors to cease production. Sir Robert Hudson, chairman of the company, said on January 11 that it had been anticipated that there would be an improvement in the market for chrome, and, in the hope of this improvement materializing, the company had entered into an agreement with one of the mineral-buying concerns in terms of which £4 10s. a ton for chrome at siding had been advanced. Payment had been made for 872 tons of chrome, but as the all-in costs of production were in excess of £4 10s., and as the company's resources were exhausted, there was no option but to close down. The Divide mine, which produced just over 11,000 tons of chrome ore in 1953, is now placed on a caretaker basis.

FEDERATION'S FAVOURABLE TRADE BALANCE

The Rhodesian Federation had a favourable visible balance of trade of nearly £20,000,000 in the first nine months of 1954. The Federation's most valuable single export was copper, which was valued at nearly £60,000,000 during the period under review. The United Kingdom was the largest customer for Rhodesian copper (£38,000,000), together with the United States (£8,500,000) and South Africa (£1,900,000). The United States purchased £2,000,000 worth of the chrome exported during the period, and the U.K. bought more than half of the asbestos valued at £5,000,000 exported in the first nine months of 1954.

The chief mineralogist of the Southern Rhodesia Geological Survey has announced that hurlbutite, a rare beryllium mineral, has been recorded for the first time in the Colony. He states that previously it had been recorded from only two localities, first in New Hampshire, U.S.A., in 1949, and later from central Finland. The Southern Rhodesian specimen was sent to the Geological Survey in August last year by a miner in the South Urungwe district.

Mining Development in Asia and the Far East

Increasing appreciation of the value of indigenous mineral resources was shown last year throughout Asia and the Far East, and mineral exploration was intensified with geophysical surveys being increasingly employed. The following article reviews the development of the major minerals in the area during the year, and concludes by indicating the interest taken by various governments in mineral exploitation.

In Asia and the Far East during 1953-1954 the lessening demand for manganese and chromium ores was shown by a decline in prices. Indian ore with 46-48 per cent Mn dropped from $1.18-$1.21 per l.ton (duty extra c.i.f. U.S. ports) in the latter part of 1953 to $1.00-$1.02 in the middle of 1954. From April, 1954, lower grade manganese was almost unsaleable in the U.S.

The decline in world prices caused considerable concern among manganese ore producers in India. Since the beginning of 1954 about 63 mines have closed down in the State of Madhya Pradesh, which normally supplies about 70 per cent of India's ore exports, and as a result 25,000 workers became unemployed. The Government of India was therefore requested to reduce the export duty on manganese ore as a relief measure for the manganese industry.

In the Philippines the output of manganese ore rose to 21,508 tonnes in 1953 compared with 20,627 tonnes in 1952. General Base Metals Inc., the country's largest manganese producer, reported that prospects for 1954 were better than in previous years. Proving of the company's property was begun in August, 1953, under the supervision of the U.S. Geological Survey and the Philippine Bureau of Mines. By October 31, 1953, about 1,300,000 tons of manganese ores of all grades had been developed on the property. Approximately 200,000 tons of this can be upgraded to shipping grade in the company's washing plant.

Pakistan's chromium ores, which normally command a favourable price in the world market, dropped in the U.S., from $51-52 per l.ton (dry basis) to $47-48 during the first half of 1954. Nevertheless it was anticipated that last year's production would exceed the all-time record of 23,000 tons set up in 1953. Plans for the modernization of mining techniques are under way and orders have already been placed for equipment.

Production of chromite in the Philippines is also on the up-grade. Chromite ore mined by the Benguez Consolidated Mining Co. for Consolidated Mines, Inc. at Masinloc, Zambales, was being shipped to the U.S. for the Government's stockpile at the rate of about 57,000 tons of refractory grade ore per month. Shipments can probably be increased to 75,000 tons a month when new rail facilities are available, but it was anticipated that the railway under construction would not be completed before the end of 1954. Another heavy media plant is being built by the Acoje Mining Co. at Acoje, who are now producing 300 tons a day of 48-49 per cent chromite concentrates.

It was reported that rich deposits of chromite had been found on the Irawan Mountain, 15 miles from Puerto Princesa in the island of Palawan. The grade is claimed to be the highest yet discovered in the Philippines.

SURPLUS OF NICKEL AND TUNGSTEN

For both nickel and tungsten 1953 was a transition year from shortage to surplus. Nickel production in Japan — the only country in the region producing nickel metal in substantial quantity — was expected to exceed domestic requirements in 1954. Early in 1954 it was announced that a contract for 7,000 tons of nickel ore had been signed between a Japanese firm and a New Caledonian mining company.

After falling steeply in 1953, tungsten prices started to become firm about the end of March, 1954. The recovery was attributed to political developments in Indochina, together with the announcement of a new "long term" mineral stockpile by the President of the U.S.

These price fluctuations had considerable effects on local tungsten markets in Asia. In Bangkok it was difficult for ordinary buyers to obtain any substantial quantity of ore in the latter part of April. There was reason to suspect that the rise in price was due to withholding of supplies by the sellers, and in fact, the improvement was short-lived. Towards the middle of 1954, prices of wolfram came down to about $22-$23 per s.ton of WO_3 in the U.S. market and to about 150-160s. per l.ton unit in the London market.

Apart from mainland China, the region's chief producers are South Korea, Thailand and Burma. South Korea produced 7,441 tons of tungsten concentrates in 1953 (3,790 tons in 1952) and Thailand 1,620 tons. The actual production figures of Burma for 1953 are not available, but close to 2,000 tons (including mixed tin and wolfram ores) were shipped from Tavoy and Mergui districts during the year and 221 tons of Burmese ore reached the U.K. in the first half of 1954.

The Ministry for Foreign Affairs of the Republic of Korea announced that South Korea would sell its tungsten to any country offering to buy it after the exclusive sales agreement with the U.S. expired on March 31, 1954. Owing to lack of buyers, the Government later suspended mining, but operations were resumed on July 1, 1954. It was reported that mines had been instructed for the time being to produce only 20 tons per month. The ore will be stored in Government warehouses till foreign purchasers can be found.

TIN IN S. KOREA AND CHINA

Production in 1953 remained at about the same level as in the previous year. The principal events of interest were the discovery of tin deposits in South Korea and the completion of three new projects in connection with the development of the Kochiu tinfields in Mainland China. The tin output of this district in 1953 was ten times that of 1949.

Mawchi Mines Ltd., a large tin wolframite mine in the Karenni State, which had been under the control of the Karen insurgents since 1948, was liberated by the Government of Burma in December, 1953. It was reported that the property had escaped damage and that the two hydro-electric power stations were in working order. The mine equipment was said to be in good condition. The Thebawleik Tin Dredging Co. is the only company in Burma with a tin dredge at work. Its production during 1953 was 542 l.tons of concentrates.

Indonesia remained the world's second largest tin producer, despite a 3.6 per cent reduction of output in 1953 to 33,882 tons. Production from the Banka mine rose to about 2,000 tons monthly towards the end of the year. During the first four months of 1954 Indonesia produced 10,298 tons of tin concentrates, of which 6,497 tons came from Banka.

Thailand's tin production reached 10,281 tons of concentrates in 1953 (9,500 tons in 1952). The Government has decided to establish a tin smelter to which the whole

output of the country will be directed. Concentrates are currently exported to Malaya and the U.S.

In response to the urgent demand, several countries of the region have been paying increasing attention to ores bearing tantalum and columbium. In Malaya production of columbite during the period under review was 61 tons, of which 57.5 tons was obtained from tin mines at Semeling in Kedah and the balance from Makri in Johore. The latter area, which has only recently become free from terrorism, is likely to prove a good source of supply. The interest shown by the U.S. in the columbite content of tin smelter slags has waned.

Burma, Japan, the Philippines and Thailand all showed substantial increases in production of zinc, but Burma's output is below pre-war level. In Japan the supply position has much improved compared with the conditions prevailing two or three years ago. The increase in Thailand's lead ore production has been spectacular, with the 1953 production more than three times higher than that of 1952. India produced nearly 1,700 tons of metallic lead in 1953, but this amount was insufficient to meet its requirements.

The Philippines and Burma are the region's two largest exporters of zinc. In 1953 the Philippines shipped 2,103 tons and Burma 777 tons.

THE ALUMINIUM INDUSTRY

Japanese rolling mills have been making a vigorous attempt to recover the export markets they held a few years ago. Metal is now being imported in bond, specially for re-export as semi-finished products. In addition, home producers have reduced still further the price of ingot for fabrication for export.

In India, the India Aluminium Co. Ltd. was producing primary metal at a higher rate in the first quarter of 1954 than in the same period of 1953. Imports of primary metal last year were expected to be of the same order as in 1953, when they totalled 896 l.tons. This situation provides an opportunity for the domestic industry to expand its markets, especially as wider usage is now becoming apparent.

In Taiwan (Formosa), the output of aluminium ingots amounted to 4,905 tons in 1953 (3,856 tons) and it was anticipated that last year's production would reach 7,300 tons. The principal bar to greater expansion is the shortage of power, which is also responsible for keeping up the cost.

In March, 1954, it was reported that a U.S. $6,000,000 rolling mill had been delivered to the Philippines for use by Reynolds (Philippines) Corporation, a half-owned subsidiary of the Reynolds Metals Corporation.

GOLD ON THE FREE MARKET

The region continued to lead in the "free" gold market prices, with India again paying the highest price. However, gold, generally speaking was not so much sought after as previously, the consequence being a steady decline in free market prices. The Philippines remained the region's largest producer with approximately 500,000 f.oz. in 1953, while India had an output of about 200,000 oz. There was also some production in mainland China, Japan, Korea, Malaya and Sarawak.

In the Philippines a nine-man committee was appointed by the President in March, 1954, to study ways and means of strengthening the declining gold mining industry. It has since recommended several measures, including an annual subsidy to operating mines and the possibility of issuing gold certificates which could be used as import licences.

Gold has been reported to occur widely in British Borneo, but during 1953 mining was undertaken only at the Bau field in West Sarawak. Gold exported from this field totalled 442 f.oz. in 1953 and 220 f.oz. in the first half of 1954. Sarawak's gold production from 1864 to 1953 inclusive aggregated 1,212,727 f.oz., which has produced direct revenue of over M$2,500,000 in royalties, rents and licence fees.

GENERAL PRODUCTION

There has been little change in the copper picture. Production in the Philippines shows a slight decline (12,715 tons in 1953 against 13,241 tons in 1952).

Travancore Titanium Products Ltd. — India's only producer of titanium oxide — resumed production after being closed from the middle of 1952. The Indian Government loaned the firm Rs.1,500,000 to help it reopen. The capacity is about 1,800 tons per year, but only about 600 tons is being absorbed by the local market.

Outside Japan (vide ECAFE report for 1952/53 — *Mining Journal*, March 5, 1954, p. 270) there is no production of titanium metal within the region.

A uranium-thorium factory at Trombay near Bombay was scheduled for completion by the end of 1954. Capital expenditure on this project was estimated at about Rs.4,500,000, Trombay was selected for the site because of its proximity to the headquarters of the Atomic Research Commission.

In Ceylon the original proposal for the establishment of an ore-dressing plant at Pulmoddai for the treatment of "black sands" has been deferred. The Government decided to sell the raw beach sand by world tender.

The pilot plant for the recovery of monazite from beach mineral concentrates has been operating satisfactorily. Production from July, 1953 to June, 1954 were : Grade I (99 per cent monazite) 35 tons ; Grade II (85 per cent monazite) 22 tons.

STATE LEGISLATION

In Afghanistan a law has been passed to encourage foreign investments in mining. Under the new regulations, foreign investments will be accorded the same treatment as national capital. Provision is made for transfer of profits abroad after payment of income tax and for repatriation of capital. Foreign employees of companies will be allowed to transfer abroad up to 70 per cent of their salaries.

In Burma, the Government has announced that it does not at present intend to nationalize mines, but will participate as partners with existing foreign companies, taking from one-third to one-half interests. No new mining leases will be issued to the companies, however, and when the present leases expire they will not be renewed.

The Minerals Advisory Board of India has set up various committees and sub-committees to study ways of increasing the production of metallic copper, lead and aluminium, and measures to be taken for encouraging the export of finished and semi-finished products.

The Government of the Republic of Korea has been studying ways of increasing mine production in order to lessen dependence on foreign aid. The construction of custom mills in several areas has been proposed. Money will be loaned to produce and equip mines with modern machinery, the loans to be repaid from the ore sold to custom mills.

In Nepal a code of mining laws is being prepared in order to encourage development of the country's mineral resources. In the Federation of Malaya, Hong Kong and Viet Nam, new mining and mineral ordinances are expected to be enacted before the end of 1955.

S.A. COAL MINING—I

The Coal Mining Industry in South Africa

The increased output and vast reserves of the South African coal mining industry, together with the low pithead cost of the coal produced, are indicative of the industry's encouraging future, provided an adequate supply of railway trucks is available. Apart from domestic consumption and the tonnages exported, South African coal provides the coke supply for the indigenous iron and steel industry and for the oil from coal project at Vredefort in the Orange Free State. The following article is the first of two instalments which together present an overall picture of the South African coal mining industry to-day. The first part, appearing below, describes mining methods, geological structures and industrial organization, while the concluding instalment will discuss the trends and the future outlook for the industry.

The South African coal industry established a new record in 1953 with a sales production of 30,569,655 s.tons, which realized £16,464,379. This is more than 18,000,000 tons higher than the output for 1920, representing an increase of 150 per cent in 30 years. Transvaal collieries hoisted more than 21,000,000 tons last year, Natal 5,500,000 tons, and the Orange Free State nearly 4,000,000 tons. The cost of coal at the pithead averaged 9s. 11d., compared with 5s. 4d. in 1938 and 7s. 3d. for 1951, and is claimed to be the lowest in the world. The output of South African collieries appears in tabular form each month in *The Mining Journal*, the last insertion being that for November, 1954, which appeared in our issue of January 14. Since the commencement of production in the Union, about 760,000,000 tons of coal have been mined and sold.

The coal treatment plant at a South African colliery

Considered in relation to the present rate of exhaustion South Africa's known coal reserves are enormous, showing a life which runs into some thousands of years. In 1928, W. J. Wyberg *(Geological Memoir*, No. 19) placed them at 226,771,000,000 tons. As a result of the Government's survey work, most of the South African coalfields are now well-known geologically. Commercial interests have prospected the most important fields by boreholes and other means, proving the existence of very large reserves which can be cheaply and easily mined. The known reserves of good quality coal are sufficient to meet the country's requirements for some hundreds of years, even allowing for a considerable increase in the present rate of consumption.

MINING METHODS

The more important coal seams occur in the Northern Orange Free State and Northern Natal, and thence northwards through the Transvaal to the Waterberg and Zoutpansberg areas. The Cape Province, as a whole, has no deposits of commercial value. The main producing areas are Northern Free State (Vereeniging district); Northern Natal (Dundee and Vryheid); and in the Transvaal the Springs-Heidelberg, Ermelo-Breyton, and Witbank-Middelburg areas. The Witbank-Middelburg zone is the most important of these areas by reason of the quality of the coal produced and also of the available reserves. In recent years this field has tended to move southwards to a line extending broadly from Oogies south of Witbank to Vandyksdrift.

In both the Transvaal and Natal the coal seams are worked through adits or incline or vertical shafts, depending on the depth of the seams and whether convenient outcrops are available.

In the Witbank coalfield the vertical depth to the lowest seam worked varies from 50 ft. to about 300 ft. The coal is usually hauled direct to the surface either in mine tubs through inclines over easy gradients by the endless rope system, or by conveyor belts up inclined shafts. The bord-and-pillar system of working is usually adopted. As a general rule the pillars measure from 20 ft. to 30 ft. square with bords 20 ft. wide. The extraction obtained during primary development varies from 67 to 80 per cent. In a few instances, where the seam being worked is near the surface, secondary extraction or reduction in the size of pillars is carried out, resulting in the ultimate recovery of from 85 to 90 per cent of the workable coal.

The workings of the Witbank district collieries are usually fairly dry and apart from some local undulations the seams lie practically horizontal. Conditions underground are good. There is plenty of height, good ventilation, and the atmosphere is good.

The collieries situated in the Vereeniging-Springfield region are among the largest producers in the Union. The coal seams are situated near the surface and are reached through inclined shafts. As a rule only two seams are present; these are of considerable thickness, but the upper seam is usually of too low value for present-day requirements. The necessary values are obtained by selective mining and the thickness of coal worked varies from 6 ft. to 30 ft. or more. The method of mining is the usual one of pillar and stall.

The outputs are washed and the bulk of the production is supplied to the power stations of the Electricity Supply Commission, which are situated in such close proximity that in certain cases the washed fuel is delivered by conveyor belts from the colliery directly into the bunkers of the power station.

NATAL DEPOSITS

The coal from the Natal fields is the best found in South Africa and is in great demand for the export and bunkering trade. The seams are thinner and the working depths are usually greater. The collieries in Natal are, on the whole, dry and dusty, and in several cases extremely fiery. In some parts of the fields the coal is very susceptible to spontaneous ignition and " gob " fires are a continual source of worry.

The usual system of mining is bord-and-pillar, with bords 16 to 20 ft. wide and pillars ranging from 40 ft. square to 80 ft. square, depending on depth. The bord-and-pillar workings are usually laid off on the panel system to

facilitate ventilation and subsequent total extraction of the pillars, and to provide control over gob fires.

SCREENING AND WASHING

Throughout the South African collieries marketable coal is classified into the following sizes :

Rounds :	+3½ in.
Cobbles :	+1¼ in.−3½ in.
Nuts :	+ ¾ in.−1¼ in.
Peas :	+ ¼ in.−¾ in.
Duff :	− ¼ in.

The railway rates on coal and the distances over which the product must be transported to many centres are such that the cost of coal to the consumer is principally made up of railway charges. The demand for higher grade coals is therefore very keen and washing and cleaning are of great importance. All South African coals are characterized by a relatively high ash content, as compared with those of the European and American fields. In the majority of South African coals the distribution of ash through the specific gravity range is very uniform, with the result that the elimination of most of the mineral matter by washing is difficult. Generally speaking, it is impossible to clean by ordinary methods, the average ash content of South African coals being over 10 per cent. Despite these difficulties, great strides have been made in the development of efficient washing methods and the equipment of collieries with washers. In this respect the Natal coals are easier to treat than those of the Transvaal.

ELECTRICAL PRODUCTION

The natural advantages of easily mined coal in thick seams at shallow depths are exploited by an industry which has become technically well organized and equipped and can work at low costs. Especially in the Transvaal and Orange Free State, the larger collieries are electrified, as are a number of the Natal Collieries. Most of the coalfields are served by power lines of the Electricity Supply Commission.

The industry has kept pace with the country's ever-increasing requirements by taking maximum advantage of modern production methods and by making timely provision for future expansion.

During the war the Union's coal output increased from 18,000,000 tons (in 1939) to 25,500,000 tons (in 1945). Towards the end of the war South Africa, despite its relatively small production, became for a limited period the principal coal exporting country in the world Of the total Union production in 1945, some 4,750,000 tons were shipped overseas. The expansion of the coal mining industry during the war period was further stimulated by a small but persistent increase in the internal demand, which rose from 7,000,000 tons in 1913 to 15,000,000 tons in 1938 and 20,400,000 tons in 1945. This expansion still continues and is deriving a renewed impetus from the rapid development of the new gold field in the Orange Free State.

Electric drilling operation

An arc wall coal cutter undercutting a seam on the Witbank field

INDUSTRIAL ORGANIZATION

The coal industry in South Africa is very highly organized. Centralized control over production is exercised through the Collieries Committee of the Transvaal and Orange Free State Chamber of Mines and through the Natal Coal Owners' Society. These two organizations represent almost all coal producers in the Union. By securing uniformity and smooth operation of the various agreements now in force, they are making a major contribution to the development of the industry on sound progressive lines.

Last year the South African coal mines gave employment to 3,400 Europeans and 52,600 Africans and coloured workers. The total wage bill amounted to £5,627,788.

The industry itself handles the marketing of coal in the Union. The Transvaal Coal Owners' Association was formed in 1907 after almost ruinous competition among coal owners. It allots shares to the member collieries, buys their output at fixed basic prices at the pit-head, disposes of the coal to the best advantage, pools the revenue from sales, and distributes the proceeds to members *pro rata* to the tonnage of their sales.

In the Transvaal and Orange Free State about 88 per cent of the total output is produced by the 25 colliery companies that are members of the Transvaal Coal Owners' Association. This allows the Association to guarantee regular supplies of coal to the railways, mines, power stations, and other customers, and to arrange production at the various collieries on the most efficient basis. The Association has also been able to build up a bunker and export business through the port of Lourenço Marques, where up-to-date coal handling plant has been installed. An important feature of the organization is that each member is obliged to maintain a substantial margin of output beyond the actual tonnage called for each month.

In Natal, the distribution of bituminous coal is organized on a similar basis, except that the inland, bunker and export businesses are catered for by three separate bodies acting in close collaboration. These three selling organizations control practically the whole of the bituminous production in Natal.

Natal coal for the bunkering and export trades is dispatched to Durban, where a new coal-handling plant of very modern design was installed during the war.

Recovery of Ultra-Fine Mineral Values

Important contributions can be made towards the conservation of natural resources by recovering mineral values from primary and secondary metallurgical slimes and flue dusts. This applies particularly to ultrafine mineral particles that escape recovery by conventional mineral dressing procedures. The article which follows is the condensation of a progress report by K. K. Kershner and A. A. Cochran, chemists in the U.S. Bureau of Mines, appearing in *Report of Investigations 5076*, published by the Bureau. The article describes the chemical experiments to which samples of tin-ore slimes were subjected, and concludes by voicing the opinion that the preliminary laboratory research so far completed gives promise of the possibility of commercial application.

The mineral material used as a subject for study was tin-ore slimes, consisting principally of quartz, with appreciable quantities of tourmaline and sericite mica and small amounts of cassiterite, pyrite, haematite, and arsenopyrite. The tin content is approximately 0.5 per cent.

Particle-size determinations were made by air elutriation in a Roller analyzer, by sedimentation with a modified Andreasen pipette by a turbimetric method, and by simple beaker sedimentation. Reasonable agreement was obtained and chemical analyses of the different sized fractions showed that the content of Al_2O_3, Fe, and SnO_2 increases and SiO_2 decreases with particle-size decrease. About 85 per cent of the tin occurs in the less-than-56-micron fraction, which is approximately 70 per cent, by weight, of the total.

PHYSICAL EXPERIMENTAL PROCEDURE

Differences in the specific gravity of slime components suggest the possible application of gravity separation of cassiterite from sized fractions. Such separations have been developed extensively but are unsatisfactory when applied to particles 15 microns or less in diameter. Separation of cassiterite by sedimentation has attractive economic features, and a modified Andreasen pipette was used to determine sedimentation rates of slimes subjected to a wide variety of treatment. Adsorption effects created by various reagents were studied on finely ground cassiterite and quartz.

It has been reported that synthetic cassiterite of less than 1 micron particle size is flocculated within a pH range of 0.9 to 7.6, but efforts to separate cassiterite and quartz under controlled conditions of pH were unsuccessful. Sodium hydroxide and sodium silicate peptized and ammonium hydroxide and barium hydroxide flocculated tin slime, and acids exerted little effect. Numerous sedimentation tests were conducted to study adsorption effects created on tin slime by many reagents, but selective separations of cassiterite were not appreciable. The use of heavy organic liquids was not investigated owing to excessive cost from a practical viewpoint.

Dielectric constants of slime components indicate that cassiterite, pyrite, and haematite can be separated from slime dispersed in a nonconducting medium having a suitable dielectric constant. Nitrobenzene and kerosine were mixed proportionally to form solutions with a dielectric constant range of 2 to 36, and tin slime was dispersed in these solutions by small additions of aniline and oleic acid. Small-scale separations were made by removing attracted particles on an electrode consisting of uniformly coiled silk- or cotton-insulated copper wire connected to a transformer. The other electrode was a similar copper wire centred within the copper coil. The best results were obtained with a potential of 5,000 volts.

A small quantity of cassiterite concentrate was collected manually from the electrode after many immersions and was found to contain 4.4 per cent tin. This concentrate was treated in a similar manner to yield a second concentrate and a residue analyzing 9.00 per cent and 3.04 per cent tin, respectively. Recovery of tin in this concentrate was 47 per cent of the tin in the original concentrate.

ELECTRODE SPACING

Another series of separations was made on the residue, and a concentrate and a residue were produced that analyzed 10.71 and 1.96 per cent tin. The tin in this concentrate constituted a recovery of 43 per cent. In general, the experimental results were erratic. Attractive forces are proportional to the volume of the slime particle, and frictional resistance is proportional to the surface area. In ultrafine slime the ratio of surface areas of particles to their volumes is high, and strong electrical forces are necessary to initiate directional movement. The distance between electrodes is a critical factor, and the encircled electrode is the principal centre of attraction as the voltage gradient is highest in its vicinity. Electrode design can be improved over the assembly used in these experiments.

Separation of cassiterite by electrophoresis was attempted in a few preliminary experiments. A direct-current potential was impressed between electrodes immersed in suspensions of tin slime in acetone. Slime particles were attracted to the anode, but preferential separation was not attained. Aqueous slime suspensions also gave negative results. Wide variations in particle size led to different migration rates and a lack of slime-mineral selectively. In all, electrostatic and electromagnetokinetic separations were not considered promising.

CHEMICAL EXPERIMENTS

To investigate the reduction of cassiterite by hydrogen, large cassiterite grains were placed in portions of hydrochloric acid of pH 0.0 to 0.6 and different metals were added. Zinc and aluminium displaced hydrogen, which reduced cassiterite surfaces to metallic tin, but hydrogen liberated by iron and magnesium did not. Cassiterite placed in water was not reduced by passage of molecular hydrogen or by hydrogen generated by adding sodium amalgam.

Evolution of hydrogen by zinc in hot slime acidified with hydrochloric acid gave reduction of cassiterite to form stannous chloride. Zinc amalgam substituted for zinc gave greater reduction with slower displacement of hydrogen. Electrolysis of hot acidified slime with graphite anode and mercury cathode reduced cassiterite. Reduction of cassiterite by hydrogen generated electrolytically in acidified slime was considered to offer better control and economy.

Experiments were conducted to study the relationship of variables affecting the reduction of cassiterite by active hydrogen produced by electrolysis of acidified slime. As amperage increased electrochemical efficiency decreased. Tin recovery was higher at lower acidities and in all of these tests the acidity was sufficient to dissolve metallic tin. It was shown that 85 deg. to 90 deg. was a suitable temperature for the electrolyte. Increase in electrochemical efficiency with increase in quantity of slime in the electrolyte was revealed and calculations showed that the per cent recovery of total tin was simultaneously decreased.

A series of tests was made in 400-ml. beakers with 30-gram. portions of slimes containing 0.6 per cent tin to determine optimum conditions. A graphite anode and a mercury cathode, which had a surface area of about 44 sq. cm. were used, and the cathode was connected by an iron wire enclosed in a glass tube. Enough acid was added to provide approximately 15 per cent by volume of concentrated hydrochloric acid at the conclusion of each test. This was ample for ready dissolution of tin formed by reduction of cassiterite. When other conditions were relatively constant, tests with higher voltage usually gave the better recoveries of tin. When acidified tin slime in contact with chlorine gas was exposed to long-wave ultraviolet light, cassiterite was not reduced. However, treatment of slime with chlorine gas before electrolysis resulted in better tin recovery.

THEORETICAL VIEWPOINT

Hydrogen displaced from acidified slime by zinc and aluminium reduces cassiterite appreciably, but hydrogen liberated by iron and magnesium under similar conditions causes little, if any, reduction. Likewise, hydrogen evolved at a mercury cathode during electrolysis of acidified slime leads to reduction of cassiterite, but hydrogen released at silver or platinum cathodes has negligible reducing effect. It is significant that zinc, aluminium, and mercury have high overvoltages but iron, silver and platinum have low overvoltages. In general, metals with low hydrogen overvoltages have high melting points and therefore have a strong crystalline structure. Metals having high overvoltage have lower melting points, adsorb less hydrogen and permit greater release of the atomic form of the element.

Overvoltages can be increased by raising current density, by decreasing acidity, and by adding salts, such as potassium chloride and calcium chloride. Control of these factors leads to greater reductions of cassiterite. An exception occurs when the temperature of the slime is raised. Higher temperatures lower the overvoltage but increase tin recovery. This may be due to faster dissolution of reduced tin at a given acidity at higher temperatures.

CONCLUSIONS

Separating cassiterite from tin slime by using physical properties of slime components has the inherent disadvantage that the forces causing separation are proportional to the mass of the particles. In ultrafine slime the ratio of surface area to volume of particles is so large that surface forces are far more important than those due to volume. This condition causes successful application of physical methods of concentration to be difficult.

The large surface areas of particles of slime components offer an advantage for separations involving chemical treatment where reaction rate increases in proportion to surface area. Preferential reduction of cassiterite by an active form of hydrogen appears to offer promise as a means for tin recovery.

Recoveries of 40 to 50 per cent of the total tin in the slime and electrochemical efficiency of 3 to 4 per cent are attained. In line with previous investigations on the electrowinning of tin from lower grade ores it is believed that the above preliminary laboratory research has definite industrial possibilities. Further research is being conducted to improve the procedure and to recover tin from stannous chloride formed in treated slime.

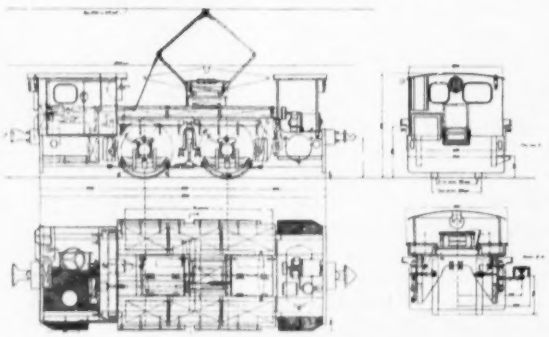
A New Mine Haulage Locomotive

In 1952 the Swedish manufacturers, Allmanna Svenska Electriska Aktiebolaget (ASEA), delivered two new type haulage locomotives for service in the Kiruna mines. The following article by O. Olsson, locomotive department, Asea, and condensed from *Asea Journal*, Vol. 27, describes the locomotives and points out the conditions which necessitated their construction.

The Luossavaara-Kiirunavaara iron ore mines at Kiruna, Sweden, were originally opencast workings, but the change over to underground mining methods produced an increased output with the result that larger locomotives had to be used for underground haulage operations as well as a wider rail gauge within the mine.

In 1949, Asea supplied four locomotives designed for the original 29.5 in. gauge, and on the basis of the experience thus gained drew up specifications for a new type of locomotive designed for 35.5 in. gauge. The new locomotives have an adhesive weight of 13 tons and a nominal 1 hr. drawbar pull rating of 2.7 tons at about 7.5 m.p.h. Total drawbar pull is approximately 3 tons at about 7 m.p.h. Two locomotives of the new type have been in continuous operation since 1952, while the prototype units have been in operation since 1949.

To obtain the adhesion weight of 13 tons the locomotive frame is of heavy steel plate welded construction. The wheels are of the Monobloc type of 39.4 in. dia., 4.5 in. width and 4.5 in. axle dia. S.K.F. axle boxes are fitted and at each end of the locomotive there is an automatic truck coupling. The line and rail voltage is 600 v. D.C.



Assembly drawing of a locomotive for 35.5 in. gauge

In the ore tipping operation, the mine cars are hauled by the locomotive to a tipping shaft and on to a collapsible bridge. The bottom of each truck is hinged at one end and swings free when the bridge is lowered, while steel runners along each side engage in supporting rails on the sides of the collapsible bridge. By this means the body remains stationary while the bottom and the chassis swing clear. These latter parts are locked to the tilting portion of the bridge, which opens at an angle of about 45 deg., and as a safety measure the locomotive is likewise fitted with steel runners to erase the danger of overbalancing into the shaft.

Power is supplied through a trolley wire set between 6 ft. and 10 ft. above rail level. At the loading chutes overhead contact wires cannot be used and at these points power is supplied through a covered third rail on one side of the car, the side utilized depending on the position of the discharge chute. The two electric traction motors of type L.J.B. 72-17, are rated at 60 h.p.

MACHINERY AND EQUIPMENT

Armoured Snaking Chain Conveyor in U.K. Operation

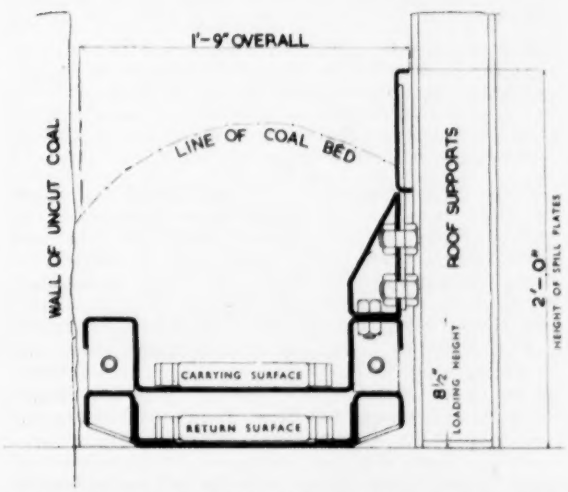
Mining conditions in the coalfields of Nova Scotia bear a similarity to those existing in the United Kingdom and for this reason the Dominion Steel and Coal Corporation decided some time ago that the British longwall system of excavation was more suited to most parts of the coalfield than the American room and pillar system. After investigating every type of longwall power loading equipment then in use throughout the world, it was decided that no single machine could be considered as ideally suited for the conditions existing in the Nova Scotia field and, as a result, the Dosco continuous miner was evolved after some years of experimentation undertaken with the help of American and British mining engineers and firms.

The Dosco miner was therefore designed in the Commonwealth to meet conditions markedly similar to those existing in the United Kingdom, and thus it is perhaps fitting that a Dosco is proving highly effective at the face in a colliery in this country. Working on an experimental 100 yd. face at Rawdon Colliery, Leicestershire, the Dosco is now accomplishing an O.M.S. of 12½ tons at the coalface and is winning 400 tons of coal in five hours' operation. On one of its recent runs the Dosco got 100 tons in an hour.

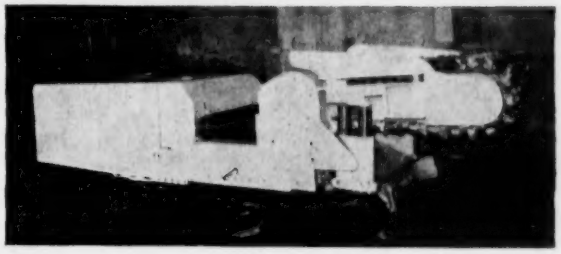
Working in collaboration with the Dosco is a Cowlishaw Walker armoured snaking chain conveyor, which is a standard C.W. 12 in. armoured conveyor but with spill plates built up to a full height of 24 in. from the base in order to cope with the fast and heavy loading of the Dosco. At first the special deep spill plates were fixed on both sides of the conveyor but experience showed that the face side spill plates could be dispensed with and so the coal is now carried between the gob side spill plates and the wall of uncut coal thereby providing capacity in depth and at the same time a relatively low loading height of only 8½ in.

Two features of the conveyor have been of particular benefit in connection with the installation. Firstly, the conveyor is narrow and most probably is the only one that could qualify for the timbering exemption necessary for the employment of so wide a machine as the Dosco on a prop-free front. Secondly, the strap link chain, which had already been developed by Cowlishaw Walker, runs freely in the pans and so enables the conveyor to be "snaked over" much more easily than the tauter type of chain would permit.

These points, together with the fact that the special pan arrangement has provided the high capacity necessary without undue strain indicate that the Cowlishaw Walker conveyor has proved an ideal partner to the Dosco longwall continuous miner in this most successful British application at Rawdon.



Vertical elevation of the 12 in. high capacity armoured conveyor as supplied to the Rawdon Colliery unit



The Dosco Miner

Flexible Tube for Compressed Air Lines

Heavy gauge polythene tube is ideally suited for carrying compressed air supplies, as it has many advantages over other piping materials due to its corrosion resistance, lightness and flexibility, which facilitates installation and manipulation of bends and curves.

Polythene tube is supplied by Telektron (Great Britain) Ltd. in accordance with British Standard Specification 1972: 53 in coils of 100 ft., 200 ft., or 500 ft. Tube is supplied in three sizes, and the working pressures which may be continuously applied to the tubes at 100 degrees F. are 255 p.s.i., 200 p.s.i. and 170 p.s.i. at ¼ in., ⅜ in. and ½ in. i.d. size.

The coefficient of expansion of polythene is such that a change in length of one-tenth of an inch per ten feet per ten degrees change in temperature is likely to be experienced, consequently, ample allowance must be made for this variation. The flexibility of polythene tube permits easy disconnection for maintenance purposes. The tubing may also be very conveniently taken out of service, re-coiled and used elsewhere.

Economic Operation by Planned Production

That substantial production savings may be the outcome of applying the economies of welded steel construction to manufacturing practice is the theme of an interesting pamphlet entitled *Origineering*, published by Lincoln Electric Co. Ltd. "Origineering is defined as the science of originating new engineering designs, and it is indicated that savings can be reduced regardless of output quantities because steel is more economical to purchase than iron, its design requires less material owing to a greater strength, and that manufacturing costs are reduced.

It is pointed out that analysis of operations where initial costs of steel fabrications have been higher than those of iron reveal shortcomings in the designs adopted or in production procedures. The pamphlet states that future designs will require a new initiative in engineering thought. One example given shows how a saving of 50 per cent was effected during the manufacture of a machinery component. The pamphlet is the first of a series.

Heavy Duty Plugs and Sockets

The cables and connectors of temporary electricity supplies in mines and quarries have to withstand vigorous treatment, and with this fact in mind, the Plessey Company Ltd. have produced a range of heavy duty plugs and sockets for joining electric cables to withstand rough handling usage. There are your basic housings made of forged aluminium bronze plugs and sockets.

The housings are arranged to accommodate either a plug or socket fitting, which are interchangeable, in any of the three standard sizes, 22 way 10 amp., 4 way 50 amp., and 3 way and 1 earth return, 50 amp.

METALS, MINERALS AND ALLOYS

COPPER.—It has been forecast several times in this column that, if the Chileans were determined in their intention to switch copper from the United States to Europe, the American price of 30 c. would crack; this was, in fact, what happened last week. Anaconda, which gets about 75 per cent of its supplies from Chile was the first to yield on January 28, Phelps Dodge followed on January 31 and Kennecott followed on February 1. All three companies raised their selling price to 33 c. per lb. and other producers are expected to fall into line.

It is not, of course, known what terms have been made between the American owned Chilean producers and the Chilean Government but since the deal the London price has further outdistanced New York and has reached £337 a ton for spot metal. If the companies were able to secure a firm bargain on copper they may have staved off, for the time being, the switch of Chilean supplies; if there was no firm deal but a mere raising of the ante then the ante will have to be raised again. It is an interesting coincidence that at this juncture Bache and Co. should have published a further report on Chile covering 1954 and extolling the virtues of independent marketing for Chilean copper.

The break in the American price level is only another facet of the general world problem of marketing copper with which London and the Commonwealth producers have been wrestling in the past weeks. For it is quite clear that the American producers cannot in all circumstances lay down a price for the metal when a significant proportion of essential American supplies is outside their control. Critics of the London Metal Exchange may well wonder at the latest move. The L.M.E. price does, after all, signify something—the true scarcity value of the metal. The price of 33 c. does not signify the open market value in the United States, nor does it signify the suitable long term price for orderly marketing for that title was claimed by the figure of 30 c.; it signifies only a most unhappy compromise between two competing marketing policies.

Meanwhile, physical supplies in the United States continue to be as tight as ever and the prospect is not improved by the impending closing for maintenance work from 4 to 6 weeks of American Smelting's El Paso Refinery with a loss of 1,000 tons of copper a week. In the circumstances a close watch must be kept on current Washington discussions on the possibilities of banning copper exports and of further releases of copper from D.P.A. inventories. A spokesman of the U.S. Department of Commerce has denied reports that an embargo was to be placed on exports of copper, copper scrap and copper products, though he agreed that the matter has been and will remain under discussion. But what appears to have happened is that the department is sitting on export licence applications while the discussions take place.

The possibility of releasing further supplies of government copper to relieve the shortage also raises the matter of government export controls. Since the U.S. Government released copper to meet the shortage caused by the American and Chilean strikes there is a case for releasing more when a squeeze is exerted by Rhodesian strikers. It is true that the government is not in dire need of the copper at present going into D.P.A. inventories but there will be opposition (and perhaps not least from the metals competitors) to frequent changes of stockpiling programmes to solve what are strictly commercial marketing problems. Furthermore, Chile would no doubt object to such a move as she did when releases were made last autumn but she is now very conscious of holding more of the trumps than she did then and would not hesitate to play them.

On the Copperbelt, strike leaders still seem to be in complete control of the situation. Their orders to ignore the ultimation to return to work were obeyed by most strikers and so too was the order to refuse to report to be paid off by the companies. Those who did report were discharged and taken on again with loss of service privileges. There seems now to be only one sanction remaining to the companies—the ejection of discharged miners from company owned houses. This would be a most difficult task involving nearly 100,000 souls and it would carry with it the danger that the men might not come together again quickly enough when required. It is, however, reported that the companies may take on a substantially smaller African labour force when the strike is over.

It is tragic that this strike should be in progress when the European Union has balloted in favour of accepting fragmentation to permit African advancement to European held jobs. Apart from the loss of copper, already more than 30,000 tons, incalculable damage is being done to social relations in the industry. At present all four mines are working with limited output, Nchanga is producing about 200 tons of copper, Roan Antelope between 150 and 200 tons and Rhokana around 300 tons a day.

It is reassuring news in the circumstances to hear of the plan for doubling Bancroft's initial rate of output by 1960. What has not been made clear is where the necessary power is to come from. In view of the uncertainty still surrounding the Kafue Scheme, it is however inconceivable that such an extension to the Bancroft programme would have been announced unless one way or another Anglo American could see its way clear to a satisfactory solution of the power problem within the next five or six years.

LEAD.—Demand for lead has been keener in the United States in the last week than for a long time past. Partly this represents a feeling that lead like zinc might be due for another rise in price. This feeling is tempered, however, by the belief that a rise in lead from 15 c. per lb. might cut off stockpile buying, which at above that figure might be considered unnecessary. In fact, G.S.A. is said to have been offered and have accepted the usual quota of about 9,000 to 10,000 tons last month. Producers were evidently anxious to sell the maximum amount in case stockpiling were allowed to fall away. Domestic deliveries of lead in the United States were down in 1953 from 488,437 to 475,552 tons whereas production was up from 533,883 to 551,618 tons. The chief reason for the fall in deliveries was a drop in demand among battery markers who took only 66,088 tons compared with 80,339 in 1953.

TIN.—Tin prices reacted sharply last week to the critical situation in the Formosa Straits. New York grade A went back over the 90 c. per lb. level. Although tin resources are concentrated in the Far East and the nervousness is therefore excusable it would be difficult to hold present levels for long if any marked easing of tension occurred and some decline from the highest levels has already taken place.

India, with 29 consumer votes, has ratified the I.T.A. bringing the total of ratified consumer votes to 237 out of 333 required. Belgium is now expected to ratify as a consumer and on behalf of the Congo as a producer by the end of the month. Ratification is virtually completed in Spain and Holland is also said to be preparing legislation. Slowly, therefore, the I.T.A. is coming into existence and it now hoped that ratifications will be lodged in London in time to arrange a meeting in March.

A threatened strike of miners at San Jose in Bolivia has been averted, it is reported, by the press of resignation of the Bolivian president if the strike took place. Bolivia has proposed the extension of the provisional compensation agreements with the Patino, Aramayo and Hochschild interests while negotiations continue for a final settlement.

ZINC.—Demand in the United States for Special High Grade zinc continues to grow at a remarkable pace ; there is in fact an acute shortage of readily available metal and there are even reports of some business being turned down. The demand for Prime Western and ordinary High Grade zinc has also much improved of late although there is no question of any shortage of these brands. Nevertheless the possibility of a further increase of 11.50 c. East St. Louis is again being talked about. Some American producers, it is said, are not completely convinced that the rise in price would be an advantage, at least until the recovery has gone a good deal further. There is no reason to suppose, however, that a rise would choke stockpile buying. Last month's purchases of zinc are believed to have been less than the 15,000 tons hitherto regularly taken but that was because the increase in commercial demand caused producers to offer less.

Zinc consumption was up in the U.S.A. by 4 per cent in

November to 8,211 tons, the highest figure since June, 1953. Smelter stocks fell by another 17,000 to 152,000 tons.

MAGNESIUM.—Statistically, 1954 was a poor year for magnesium. In the United States—far and away the largest producer this side of the Iron Curtain—production was down about 25 per cent at 69,729 s.tons. More encouraging, however, was the G.S.A.'s year-end decision to grant a three year extension of their lease of the Velasco plant in Texas to Dow Chemicals, which has an annual capital of 40,000 tons in addition to Dow's own Freeport plant with a capacity of around 30,000 tons.

Technically, however, good progress has been made in the past year or so. One of the limitations to the development of magnesium uses has been the problem of protection from corrosion, but it is now believed that a perfection of ceramic-type coatings such as the HAE process and Dow No. 17 process provide a practical answer to most corrosion problems. Chromium plating also promises a wider field for magnesium use in consumer products where appearance is important.

NICKEL.—When Dr. Thompson was last in London, he made it clear that the development of new civilian uses for nickel was being retarded by the heavy stockpile demands that Washington was making on producers. Some official recognition has now been given to this situation in the decision announced last week by the O.D.M. to permit the distribution of an additional 1,000 tons of nickel to private industry during the first two months of this year. This concession was in response to a recommendation from the Business and Defense Services Administration that the Government should guarantee U.S. industry a minimum supply of 100,000 tons of nickel this year. The additional 1,000 tons which is currently being made available is not coming from stockpile but will come from the diversion of current deliveries. Presumably similar concessions may be expected later in the year.

"Inco" has recently made its first stockpile delivery of 225 tons to the G.S.A. under a contract whereby it is refining concentrates from Sherritt Gordon Mines at Copper Cliff (see *M.J.*, October 8, 1954, page 401).

TUNGSTEN.—The British Government selling price for wolfram ores, which was raised last Friday to 252s. 6d. per l.t.u. (and not 242s. 6d. as reported in our price schedule), has now gone further ahead to 255s.

The London Metal Market

(From Our Metal Exchange Correspondent)

Once again the high spots of the week have taken place in the copper market, although there has been more interest in zinc than of late. The expected rise in the U.S. copper prices duly took place, but it is believed that the Chileans are not satisfied with the 33 c. level now established for the domestic price and are agitating for a uniform price of about 36 c., and with the supply situation such as it is there seems to be a possibility that in the long run the price will have to be raised again. The supply position in America is such that there are once more rumours of a ban on exports of copper and copper scrap, and even if an actual ban is not imposed it is almost certain that administrative delays in the granting of licences will slow down the actual tonnage exported. In Rhodesia the strike position is no easier, and it is estimated that some 30,000 tons of metal have already been lost which will cause considerable disturbances to U.K. consumers in two or three months' time. The political news has given no encouragement to those who wish to see lower prices, so taking all the factors into consideration a further rise in the price must be expected.

The zinc market has been active and strong, as dealers and others began to realize the cumulative effect American stockpile buying has had upon the accumulated stocks over there and that the monthly purchases are only being made at about half the authorized rate. Demand for all grades has been good with a shortage of the higher grades still existing, and premiums over those officially quoted have been paid in many cases.

The lead market has been quiet, and the slight rise which has taken place has been in sympathy with copper and zinc. Supplies seem to be sufficient to meet all demands but consumers still have no stocks, and any interruption in the flow of metal such as occurred during the last dock strike would have an appreciable and immediate effect on the price.

The demand for tin has been better, but with supplies coming forward at a good rate prices have not been affected to any large extent. The Committee of the Exchange have issued an instruction to its members to strengthen the existing no-on-shipment clause on tin contracts by adding a sentence calling for the provision of dollars by any non-American purchaser if the metal is eventually traced to the dollar area. At the same time the Committee stated that they were arranging for more efficient information to be received about arrivals in the States and added that any member found infringing the new instruction would be liable to disciplinary action. On Thursday morning the Eastern price was equivalent to £722 per ton c.i.f. Europe.

Closing prices and turnovers are given in the following table:

	January 27		February 3	
	Buyers	*Sellers*	*Buyers*	*Sellers*
Tin				
Cash	£703	£705	£709	£710
Three months	£706	£707	£710	£711
Settlement	£705		£710	
Week's turnover	630 tons		650 tons	
Lead				
Current half month	£103¾	£104	£104¼	£104¼
Three months	£103¼	£103¾	£104¼	£105
Week's turnover	3,800 tons		2,225 tons	
Zinc				
Current half month	£88¼	£88½	£90	£90¼
Three months	£86¼	£86½	£87¼	£88
Week's turnover	4,525 tons		6,700 tons	
Copper				
Cash	£312½	£313	£337½	£342½
Three months	£296	£296½	£316	£317
Settlement	£313		£342½	
Week's turnover	4,800 tons		6,975 tons	

OTHER LONDON PRICES — FEBRUARY 3

ANTIMONY

English (99%) delivered, 10 cwt. and over ... ... £210 per ton
Crude (70%) ... ... £200 per ton
Ore (60% basis) ... ... 22s./24s. nom. per unit, c.i.f.

NICKEL

99.5% (home trade) ... ... £519 per ton

OTHER METALS

Aluminium, 99.5%, £163 per ton
Bismuth (min. 2 cwt. lots) 16s. lb.
Cadmium (Empire), nominal
Chromium, 6s. 5d./7s. lb.
Cobalt, 21s. lb.
Gold, 251s. 8d. f.oz.
Iridium, £35/£36 oz. nom.
Magnesium, 2s. 4d. lb.
Manganese Metal (96%-98%) £225/£262
Osmiridium, £40 oz. nom.
Osmium, £35 oz. nom.
Palladium, £6 15s. oz.
Platinum, £27 10s./£28
Rhodium, £40/£42 oz.
Ruthenium, £16 oz.
Quicksilver, £108 10s./£110 ex-warehouse
Selenium, 43s. nom. per lb.
Silver, 73½d. f.oz. spot and 73½d. f'd.
Tellurium, 15s./16s. lb.

ORES, ALLOYS, ETC

Bismuth ... ... 50% 7s. 3d. lb. c.i.f.
40% 6s. 3d. lb. c.i.f.
Chrome Ore—
Rhodesian Metallurgical (semi-friable) 48% £12 12s. 6d. per ton c.i.f.
" Refractory 45% ... £12 5s. 0d. per ton c.i.f.
" Smalls 42% ... £8 17s. 6d. per ton c.i.f.
Baluchistan Metallurgical ... £13 5s. per ton c.i.f.
Magnesite, ground calcined ... £26-£27 d/d
Magnesite, Raw ... ... £10-£11 d/d
Molybdenite (85% basis) ... 105s. 3d.-108s. 1d. per unit c.i.f.
Wolfram and Scheelite (65%) ... 242s.-250s. U.K.*
" " " Gov't Stock d/d 247s. 6d plus charges
Tungsten Metal Powder (98% Min. W.) ... 19s. nom. per lb. (home)
Ferro-tungsten ... ... 16s. nom. per lb. (home)
Carbide, 4-cwt. lots ... ... £37 6s. 3d. d/d per ton
Ferro-manganese, home ... £54 15s. 0d. per ton
Manganese Ore Indian c.i.f. Europe (46%-48%) ... ... 66d./68d. per unit nom.
Brass Wire ... ... 3s. 7½d. per lb. basis
Brass Tubes, solid drawn ... 2s. 6d. per lb. basis

*Ex-government stock for prompt delivery from February 4

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

Last Thursday, as we went to press, the bank rate was raised to 3½ per cent. An upward movement after the issue of the Colville steel shares had been considered likely for three reasons. Firstly, the increasing inflationary trend; secondly, the failure of sterling to recover in international markets; and thirdly, the continuing hardening of money rates in the discount market. An increase of less than one per cent has not been made in recent years and it was considered mainly as a warning and a check rather than as a complete reversal of policy.

Although short-dated stocks were marked down as a result, the long issues had already discounted such a move and the removal of uncertainty quickly steadied up prices. Later, a firm trend set in which enabled markets to ride easily over the ground swell of the Formosa situation.

Kaffirs have been through a rather uninteresting week but several trends are indicated by the January returns. Among finance houses West Rand Investment Trust went ahead due to satisfaction with the increased distribution and the good results announced by some of the mines in which the company is interested. Consolidated Goldfields also advanced following progress by many of this company's properties.

Among individual Rand mines, Hartebeestfontein were again in special demand due to the long term outlook. Gains by Daggafontein and East Rand Proprietary closely followed the better January figures. Luipaards Vlei held their recent rise after the publication of the first uranium returns and the improvement in profits. The sharp fall in the figures of New Kleinfontein were due to special factors and failed materially to affect the share price.

In the Orange Free State section, Freddies Consolidated fell due to the big increase in the working loss. Loraine hardened. Buyers appeared on hopes of an improvement in the share price once the options are out of the way. Gains were recorded by both the President mines; each of these companies produced higher milling and profit figures.

Investors displayed more interest in the West African group. Ariston declined after the maintained dividend and profits but the company's increased milling capacity was ignored. Ashanti jumped; the latest returns were a distinct improvement and a large unsatisfied buyer is reported from the market. The company's big development programme is understood to be going ahead smoothly.

In the miscellaneous gold section, prices declined and St. John d'El Rey again fell on the inconclusive financial talks with Brazil. The battle for control of Camp Bird, reported last week, is still on and developing.

Coppers were again a good feature despite the continuation of the native labour strike. The mines have discharged strikers but the trickle back to work remains slow. The rise in the metal price has continued due to fears of a shortage. Bancroft jumped following the news a scheme to double output and Rhodesia Katanga were a very strong feature. Recent market opinion that the Anglo American Corporation report on this property was ultra-cautious appears to have been justified.

Eastern tins were marked up all round. There are strong hopes that the agreement will be ratified by a sufficient number of countries during the next few months. Meanwhile, the metal price remains over £700 a ton. Nigerians were similarly affected, but to a lesser degree.

Lead/zincs remained unimpressed by the easier metal prices which still remain at satisfactory level. Mount Isa jumped sharply. The company stands to benefit from the high price of copper and it is reported that rare earths have been found on some of the new leases.

Canadians were a good market particularly base metal shares where big gains were recorded by leading stocks.

FINANCE	Price Feb. 2	+ or — on week
African & European	3	+ ⅛
Anglo American Corpn.	£8	— ⅛
Anglo-French	25/-	+7½d
Anglo Transvaal Consol.	28/9	
Central Mining (£1 shrs.)	40/3	—9d
Consolidated Goldfields	60/-	+7½d
Consol. Mines Selection	50/-	+7½d
East Rand Consols.	2/9	
General Mining	4	— ⅛
H.E. Prop.	9/6	
Johnnies	43/9	—9d
Rand Mines	3	— ⅛
Rand Selection	43/9	
Union Corporation	37/9	—6d
Vereeniging Estates	4	— ⅛
Writs	41/3	+1/3
West Wits	40/-	—7½d
RAND GOLD		
Blyvoors	30/6	—3d
Brakpan	7/6	—3d
Buffelsfontein	32/-	+2/6
City Deep	13/6	
Consol. Main Reef	20/-	+6d
Crown	43/9	—7½d
Daggas	61/3	+7½d
Dominion Reefs	34/-	
Doornfontein	30/9	—6d
Durban Deep	30/-	
E. Champs	9/6	
E. Daggas	9/9	—6d
E. Geduld (4s. units)	26/9	—3d
E. Rand Props	2	+1/10½
Geduld	3	+ ⅛
Govt. Areas	11/3	
Grootvlei	19/6	
Hartebeestfontein	43/3	+6d
Libanon	9/-	—3d
Luipaards Vlei	22/9	
Marievale	19/6	
New Kleinfontein	10/6	—3d
New Pioneer	16/9	+1/-
Randfontein	67/6	
Robinson Deep	20/-	—1/3
Rose Deep	14/3	—3d
Simmer & Jack	4/1½	—1½d
S.A. Lands	22/6	
Springs	3/-	—1½d
Stilfontein	26/6	—3d
Sub Nigel	37/6	—7½d
Vaal Reefs	33/-	—1/6
Van Dyk	4/9	+6d
Ventersdorp	11/6	—6d
Vlakfontein	17/9	—9d
Vogelstruisbult	34/6	—6d
West Driefontein	5	— ⅛
RAND GOLD contd.		
W. Rand Consolidated	47/6	+7½d
Western Reefs	46/3	—3d
O.F.S. GOLD		
Freddies	5/10½	—4½d
Freddies Consolidated	12/9	—1/6
F.S. Geduld	5½	— ⅛
Geoffries	16/9	—6d
Harmony	35/9	—3d
Loraine	14/4½	+10½d
Lydenburg Estates	21/10½	—1/3
Merriespruit	12/4½	—3d
Middle Wits	19/3	
Ofsits	3	— ⅛
President Brand	74/4½	+2/6
President Steyn	46/-	+1/7½
St. Helena	27/9	—3d
Virginia Ord.	15/9	—10½d
Welkom	26/-	—1/-
Western Holdings	4	— ⅛
WEST AFRICAN GOLD		
Amalgamated Banket	2/3	—1½d
Ariston	6/10½	—3d
Ashanti	24/3	+1/-
Bibiani	5/1½	+3d
Bremang	1/4½	
G.C. Main Reef	3/7½	—1½d
Konongo	2/4½	
Lyndhurst Deep	1/3	—1½d
Marlu	1/3	—3d
Taquah	3/1½	+4½d
Western Selection	9/9	—6d
AUSTRALIAN GOLD		
Gold Mines of Kalgoorlie	14/6	
Great Boulder Prop.	8/6	+3d
Lake View & Star	16/6	+1/-
Mount Morgan	19/6	+4½d
North Kalgurli	8/6	+6d
Sons of Gwalia	7/-	—9d
Western Mining	10/3XD	
MISCELLANEOUS GOLD		
Cam & Motor	9/-	
Champion Reef	4/-	—3d
Falcon Mines	7/-	—6d
Globe & Phoenix	24/-	—3d
G.F. Rhodesian	6/7½	—4½d
Motapa	1/7½	
Mysore	5/1½	
Nundydroog	6/1½	+1½d
Ooregum	4/6	+1½d
St. John d'El Rey	13/-	—1/-
Zams	46/7½	—10½d
DIAMONDS & PLATINUH		
Anglo American Inv.	10	+ ½
Casts	27/-	+3d
Cons. Diam. of S.W.A.	7	
De Beers Defd. Bearer	6½	+ ⅛
De Beers Pfd. Bearer	16½	— ½
Pots Platinum	9/9	+3d
Waterval	16/-	+6d
COPPER		
Bancroft	42/6	+7/6
Chartered	111/6	+6d
Esperanza	5/1½	—1½d
Messina	7	— ⅛
Nchanga	12½	— ⅛
Rhod. Anglo-American	99/3	+5/9
Rhod. Katanga	27/6	+7/4½
Rhodesian Selection	31/6	+9d
Rhokana	33	+ ½
Rio Tinto	49	+ ½
Roan Antelope	23/10½	+3d
Selection Trust	73/9	
Tanks	6½	+ ⅛
Tharsis Sulphur Br.	7½	+ ½
TIN (Eastern)		
Ayer Hitam	32/6	+6d
Gopeng	7/9	+6d
Hongkong	8/4½	—1½d
Ipoh	20/-	+6d
Kamunting	8/-	+6d
Kepong Dredging	3/6	
Kinta Tin Mines	11/1½	+7½d
Malayan Dredging	9/4½	—1½d
Pahang	12/-	—1½d
Pengkalen	9/1½	+3d
Petaling	8/-	+3d
Rambutan	17/9	
Siamese Tin	6/4½	
Southern Kinta	18/3	+3d
S. Malayan	8/6	+1½d
S. Tronoh	11/10½	+4½d
Sungei Kinta	11/9	+3d
Tekka Taiping	6/3	+3d
Tronoh	8/6	+6d
TIN (Nigerian and Miscellaneous)		
Amalgamated Tin	14/4½	+1½d
Beralt Tin	29/6	
Bisichi	6/3	
British Tin Inv.	21/4½	+1½d
Ex-Lands Nigeria	3/-	
Geevor Tin	14/3	+6d
TIN (Nigerian and Miscellaneous) contd.		
Gold & Base Metal	2/7½	—1½d
Jantar Nigeria	8/3	+1½d
Jos Tin Area	15/3	
Kaduna Prospectors	2/6	—1½d
Kaduna Syndicate	2/4½	
London Tin	7/3	+1½d
United Tin	3/-	
SILVER, LEAD, ZINC		
Broken Hill South	58/-	+1/-
Burma Corporation	3/3	
Consol. Zinc	45/10½	+4½d
Lake George	10/6	+9d
Mount Isa	49/9	+2/3
New Broken Hill	39/1½	—4½d
North Broken Hill	73/6	+2/6
Rhodesian Broken Hill	13/3	—7½d
San Francisco Mines	24/3	+3d
Uruwira	6/-	+1½d
MISCELLANEOUS BASE METALS & COAL		
Amal. Collieries of S.A.	48/6	
Associated Manganese	42/6	+2/-
Cape Asbestos	11/10½	+1½d
C.P. Manganese	41/9	
Consol. Murchison	56/3	+1/3
Natal Navigation	2½	
Turner & Newall	113/-	+1/3
Wankie	17/9	—1½d
Witbank Colliery	4½	
CANADIAN MINES		
Dome	$33	
Hollinger	$31	+ ½
Hudson Bay Mining	$110	+6½
International Nickel	$114½	+5½
MiningCorpn.ofCanada	£7	+ ⅛
Noranda	$160	+3
Quemont	£8½	+ ½
Yukon	4/7½	
OIL		
British Petroleum	83/9	
Apex	30/6	—6d
Attock	48/9XD	—1/3
Burmah	6½	+ ⅛
Canadian Eagle	49/9	
Mexican Eagle	19/10½	—1½d
Shell	6½	+ ⅛
Trinidad Leasehold	34/3	+3d
T.P.D.	27/-	+6d
Ultramar	33/6	—3d

Company Shorts

Bancroft Production Target Doubled.—A recommendation has been made by the consulting engineers of Bancroft Mines in Northern Rhodesia that the company's yearly rate of copper production should be increased to 85,600 tons by the beginning of 1960 from the previous target of 42,800 tons per annum by January, 1957. To achieve this increase in capacity an additional £5,000,000 will be required, which, together with the original estimate of £12,000,000 will involve total expenditure of £17,000,000 in addition to which provision must be made for interest charges on loans.

In order to complete the original programme and to make provision for the proposed expansion a further amount of £8,000,000 will therefore be required. A joint arrangement has accordingly been reached under the terms of which the Anglo American Corporation and the British South Africa Company will provide loan facilities at 3½ per cent up to £5,000,000. In consideration, the two creditor companies will be granted an option up to and including June 30, 1958, to take up 2,000,000 ordinary shares of 5s. each in the company at a price of 37s. 6d. per share. If this option is exercised a further amount of £3,750,000 will be provided making a total of £8,750,000.

It is somewhat of a relief that after the sustained rise in Bancroft shares since their original issue the present announcement should go so far towards justifying a price which—on previous prospects alone—had been considered unduly high. Indeed, the possibility of a doubled production programme had seemed to many sufficiently remote so soon after the publication of the original prospectus as to give rise to rumours regarding the presence of uranium or some other metal on the property.

Considering the company's copper prospects, however, a good case could be made out for Bancroft shares at 45s. The mine is not so dissimilar to the neighbouring Mufulira while the grade of copper available would seem to be slightly higher. Taking the future price of copper at no more than £200 per ton (as against the present price of about £335) with costs at, say, £125 per ton there appears to be scope for a further rise in the shares. In addition, the hope that the mine may also become a cobalt producer should also be borne in mind. Bancroft's present market capitalization—in the region of £44,000,000—compares with about £57,000,000 for Mufulira. But as the latter mine is so well established it naturally merits a higher valuation and the consequent differential might be taken as representing a discount of possible future difficulties which could be encountered prior to full production being reached at Bancroft. On the other hand, in view of the excellent development progress already made at the mine together with an undiminishing demand for the company's shares, there could still be much more than is at present apparent to be disclosed from Bancroft in the future.

Writs Pays More.—A final dividend of 10 per cent has been recommended by West Rand Investment Trust on the issued ordinary capital of £4,166,235 in 10s. shares. Together with the interim dividend of 7½ per cent total distribution for the year has thus been increased to 17½ per cent from 15 per cent previously. Subject to final audit the profit for the year ended December 31, 1954, after providing for taxation was £940,000 as against £771,837. Sir Ernest Oppenheimer is chairman.

West Drie No. 3 Shaft Intersects Carbon Leader.— It has been announced that the Carbon Leader reef was intersected at the West Driefontein gold mining No. 3 shaft at a depth of 3,618 ft. below the collar at the end of January. Reef samples gave an average value of 8.6 dwt. per ton over a width of 26.4 in., equivalent to 227 in. dwt. Apart from boreholes, this intersection is the most easterly yet obtained on the property.

Western Selection Earns More and Pays More.—With the recommendation of a final dividend of 12½ per cent by Western Selection and Development Company on the issued ordinary capital of £750,000 in stock units of 5s., total distribution for the year ended September 30, 1954, has been brought up to a total of 20 per cent from 15 per cent in respect of the preceding year.

Year to Sept. 30	*Total Revenue*	*Taxation*	*Net Profit*	*Dividends*	*To Reserve*	*Carry Forward*
	£	£	£	£	£	£
1954	154,156	1,215	128,903	82,500	38,151	69,277
1953	111,858	1,628	87,746*	61,875	70,000	61,025

* Excluding £52,778 from sales of leases.

It is hoped that the directors' report and accounts will be issued within the next two weeks and that the meeting of the company will subsequently be held towards the end of February. Major General W. W. Richards is chairman.

Gold Coast Main Reef Earns More And Pays Same.—An increase in the tonnage crushed, a higher mill grade and lower costs all combined to make the year ended June 30, 1954, a profitable one for Gold Coast Main Reef.

Year to June 30	*Ore Tons*	*Milled Grade*	*Ozs. Recov'd*	*Working Costs*	*Devt. Fige.*	*Ore Reserves**
	000	*dwt.*	000	*s. d.*	000	000
1954	112.4	8.9	45.5	79 1	7.4	340.8
1953	103.6	8.5	40.4	80 1	4.1	398.9

* Value 8.62 dwt. over 67.9 inches (1953 - 8.6 dwt. over 66.4 inches).

Dividends amounting to 7½ per cent were again paid on the issued ordinary capital of £1,114,363 in stock units of 5s.

Year to June 30	*Total Revenue*	*Expenses*	*Taxation*	*Net Profit*	*Dividends*	*Carry Forward*
	£	£	£	£	£	£
1954	571,697	487,778	52,251	31,668	45,967	16,878
1953	534,801	453,179	45,002	36,620	43,878	31,177

In contrast with the net profits after tax which showed a decrease from last year's level an increase in gross profits was again recorded. These rose to £83,919 from £81,622 in respect of the preceding year. Major General W. W. Richards is chairman. Meeting, London, February 24.

Esperanza : No Intention to Raise Further Capital.—At the meeting of Esperanza Copper and Sulphur Company, the Cyprus mining property, Mr. A. Hedley Williams, the chairman, expressed his company's intention to complete the present expansion programme with the capital resources already to hand. He added that an interim report concerning the financial side of operations would be issued, possibly in February. In reply to a question regarding dividends, Mr. Williams said it was obvious that a payment could be made if revenue earned was not utilized for necessary development purposes.

JOS TIN AREA (NIGERIA), LTD.

The forty-fourth Ordinary General Meeting of Jos Tin Area (Nigeria) Limited was held at 7, Warwick Court, Holborn, W.C.1 on Wednesday last.

The following is an extract from the Statement by the Chairman, **Mr. A. B. D. Fox, A.R.C.S.,** which was circulated with the report and accounts for the year ended July 31 last:

In my statement last year I referred to the then price of £600 for tin, adding that such a figure scarcely left us a margin of profit. The subsequent improvement in the price of the metal was due to the continued buying by the U.S.A. of Indonesian production for treatment by the Texas smelter and to fill the U.S.A. stockpile.

Agreement on restriction and prospects of a buffer pool also had their effect on the market. We shall in due course make an assessed contribution to this pool and we have taken steps to plan our finances accordingly.

It is disappointing that the expenditure on prospecting during the year, amounting to £1,298, was largely abortive. This has been written off in our Appropriation Account.

As the reserves of unworked ground in our existing leases become depleted we must strive to locate additional deposits or take up new ground, and this aspect of our business is constantly in mind. This is essential expenditure; at the same time we shall continue to subject any new ground to the most careful scrutiny.

Our production of Columbite is only small, something in the neighbourhood of 4-5 tons a year, but the high price which this mineral is at present realizing makes a very useful addition to our profit.

The price of tin in the middle of December, 1954, was in the neighbourhood of £712 which, on an assay of 71% is equivalent to about £505 for our concentrate.

On this basis the result of the current year's working to date shows a satisfactory profit. The oft repeated warnings as to the exhaustion of the Company's properties must, however, always be borne in mind and the declining production is a worrying factor combined with the continuing rise in costs. New wages claims have recently been made by the Unions and are such that it is impossible for the industry in general to accept them—the matter has been referred to arbitration.

In view of the necessity of finding finance for the buffer pool and in order to have liquid funds to take advantage of investment opportunities as they occur, your Board are unanimous in recommending the continuation of the cautious financial policy which has contributed to such satisfactory results up to date.

It is felt, however, that Members should have some tangible

recognition of past profits, undistributed and ploughed back, and you will see from the notice calling the Meeting and from the Directors' Report that it is proposed to capitalize the sum of £17,864, a part of the undivided profits of the Company, by allotting to the Members one share for every five stock Units of 5s. held at the close of business on January 4, 1955.

The income from investments constitutes an important part of our profits. The quoted investments as at July 31, 1954, stood in the books at £256,986 with a market value at that date of £396,947 an appreciation of £139,961 or 54.44% and since then there has been a further increase in the market valuation.

It is my pleasure to suggest that our appreciation should be conveyed to Mr. Roberts, our Mines Manager, and our Staff for the excellent work which they are doing on our behalf.

The report and accounts were adopted and the resolutions for the capitalization of profits was approved.

RAMBUTAN, LTD.

MR. DONALD W. THOMAS'S STATEMENT.

The Forty-ninth Ordinary General Meeting of Rambutan, Limited was held on January 26, 1955, at the Registered Office, Redruth.

Mr. Donald W. Thomas (Chairman) presided.

The Reports and Accounts for the year ended June 30, 1954, having been circulated for the prescribed time, were taken as read, as was also the Chairman's Statement, circulated with the Accounts, which was as follows:

Last year at this time I was in Malaya on an inspection tour of the mines comprising the Gopeng Group and Major W. E. Hosking, as acting Chairman, issued the Annual Statement on my behalf. In the course of my inspection I visited Rambutan on a number of occasions where the then Resident Manager, Mr. F. Bede Cox, conducted me around the property and lucidly explained the mining practice and the problems both present and future. Mr. Bede Cox has since retired and I should like to place on record the Directors' appreciation of his services, and especially of his successful efforts to bring the new area "W" into production. We wish him and his wife every happiness in their retirement.

The accounts for the financial year under review show a profit of £11,063 after payment of Government royalty of £11,928 to the Malayan Government in respect of tin ore sold during the year and the provision of £14,826 for United Kingdom and Malayan taxation. Two dividends totalling 2s. 3d. per share were paid during the year and this absorbed a net amount of £6,188. The sum of £3,201 has been written off from Capital Expenditure and, after making sundry small provisions, the balance standing to the credit of Profit and Loss Account has been increased by £1,674 to £14,103, which the Directors propose to carry forward.

The return for the first quarter of the current year has been:—

> July/September 1954 Output of tin ore, 1,055 piculs = 62¼ tons, as compared with an output of 365 piculs (21¼ tons) for the corresponding period of the previous year.

The Report of our General Managers, Messrs. Osborne and Chappel, circulated with the Report, gives particulars of the work done at the mine during the year under review, and Shareholders will note they state that with the continued development of Paddock Z the mine is capable of maintaining a satisfactory rate of output during the current year.

The Draft International Tin Agreement, to which Major Hosking referred in his Statement last year, has been adopted by the required number of Producer and Consumer Countries and if/and when/ratified by the Governments of these Countries it will become operative. What the effect of this Agreement on existing undertakings will be remains to be seen. It may well be, however, that during the coming year there will be restriction in the output of mines in Malaya and this is bound to have some effect, at least, on costs in relation to production.

The security conditions during the year still remained satisfactory and no incidents occurred on the property.

I cannot conclude without expressing to our General Managers, the Resident Manager and his Staff in the East, and to our Secretary and his Staff at Redruth, the Board's sincere appreciation of all they have done for the Company during the year under review.

The Statement of Accounts and Balance Sheet, together with the Directors' Report, were received and adopted.

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ESPERANZA COPPER & SULPHUR

MR. A. HEDLEY WILLIAMS ON THE POSITION

The annaul general meeting of The Esperanza Copper and Sulphur Co., Ltd., was held on January 28 at the Chartered Insurance Institute, 20 Aldermanbury, London, E.C., **Mr. A. Hedley Williams, A.M.I.M.M.,** chairman and managing director, presiding.

The Chairman said: I am pleased to be able to present this up to date Review of the Company's position. The bringing into full operation of the new mill for treating ore from the Limni Mine was considerably delayed partly by reason of late deliveries of certain key items of plant and machinery and by the shortage of Mill water supply, which was reported in the Company's circular of July 30, 1954.

You may well ask why the inadequacy of the water supply was not discovered sooner. The wells were located under expert advice and when tested appeared to be quite able to take care of our needs. However, when the mill started on its trial runs and full pumping equipment had been delivered, installed and connected up, it was found the wells could not be relied upon to give a sufficient supply for the full operation of the plant. Thanks to the energetic and practical action taken by the local management, the water shortage has been overcome with a minimum of expenditure and time. The major part of the mill finally got going on December 15.

I am glad to tell you that the General Manager reports that performance and output of the mill are improving steadily towards regular and full output. I am pleased to be able to give you this good news which we have been awaiting for some weeks.

THE KINOUSA MINE

Operations have proceeded normally at Kinousa. The installation of a comparatively simple and inexpensive plant has permitted the upgrading of a considerable quantity of low grade ore into the shipping class with a resultant increase of revenue and profit.

PRODUCTION

Contracts have been signed with German buyers for the sale of an additional 20,000 tons of ore from the Kinousa Mine for delivery during the years 1955 and 1956. We have already contracted with Dutch interests to deliver at a satisfactory price a minimum of 50,000 tons this year of high-grade Sulphur Concentrates. Additionally, there will be production of gold-silver-copper concentrates, a product which should eventually make up more than one-half of our estimated gross income.

Jetty loading arrangements have been modified and improved and, in addition, the Cyprus Company's own fleet of barges and lighters has been put into use, making for greater efficiency and a saving on costs.

Two new generating Sets, one of 1,100 KW and the other 470 KW, have been installed. A new machine shop, store, garages, explosive magazines, blacksmith shop and various Staff and other buildings have been built.

The Aerial ropeway with ancillary plant and the Main Pumping installations and pipe lines are completed, and in use.

PROSPECTING AND DEVELOPMENT

It was hoped that from revenue and profits accruing in the latter six months of 1954, ample funds would have been available for increasing the extent of prospecting and development work, particularly in the promising Evloimeni Area. Development on a more extensive and efficient scale at greater depth, will be carried out as soon as possible.

ACCOUNTS

I regret the delay in presenting the accounts. The Annual Meeting of our Cyprus Subsidiary was not held until December 24.

Turning to the accounts, the profits of the subsidiary company were reduced because of a considerable non-recurring increase in expenditure incurred in connection with the extension of the scope of the Company's operations.

I would draw your attention to the fact that since 1952, £250,000 has been ploughed back into developing the Cyprus property and it is, of course, obvious that this has enabled us to keep our issued capital down to its present figure.

I feel that I should deal with the statement I made last year regarding the payment of a dividend in 1954.

My remarks this morning will have made clear to you why this was not possible. Published estimates of revenue and profits have been given you previously in which our revenue was estimated at over £800,000 per annum and our working profit at over £450,000 per annum. These figures stand. It may be repeated here the total Limni ore reserves proved to date are estimated at over 5¼ million tons.

I have tried to give you the true position up to this day, and I feel confident you will appreciate that a big effort has been made and I can assure you this will be maintained.

I would like to close by expressing our appreciation of the good efforts of the British Metal Corporation Limited, whose services have once more been invaluable to us. I would also like to repeat my previous special appreciation of the services of the Local Board, the General Manager and Staff in Cyprus.

Your directors are aware of the circular from Mr. Cyril Murray to shareholders dated January 21, 1955. Nominations have been submitted for Mr. Cyril Murray and Mr. Philip Lewis to be elected to the Board of Directors. These nominations will be submitted in due course at the appropriate moment at this meeting. The Directors do not consider the appointment of these two gentlemen to be in the best interest of the Company and recommend that members do not support the appointments.

After the Chairman had replied to questions, the report and accounts were unanimously adopted.

The retiring director, Mr. P. A. Ashmead-Bartlett, M.C., A.C.G.I., was re-elected on a show of hands by an overwhelming majority, but Mr. Cyril Murray demanded a poll.

Mr. Philip Lewis withdrew his nomination for election as a director.

The motion for the appointment to the board of Mr. Cyril Murray was lost on a show of hands by 8 votes to 64, but Mr. Murray demanded a poll. The Chairman announced that members would be duly advised of the date of the polls.

The proceedings terminated with a vote of thanks to the Chairman and directors.

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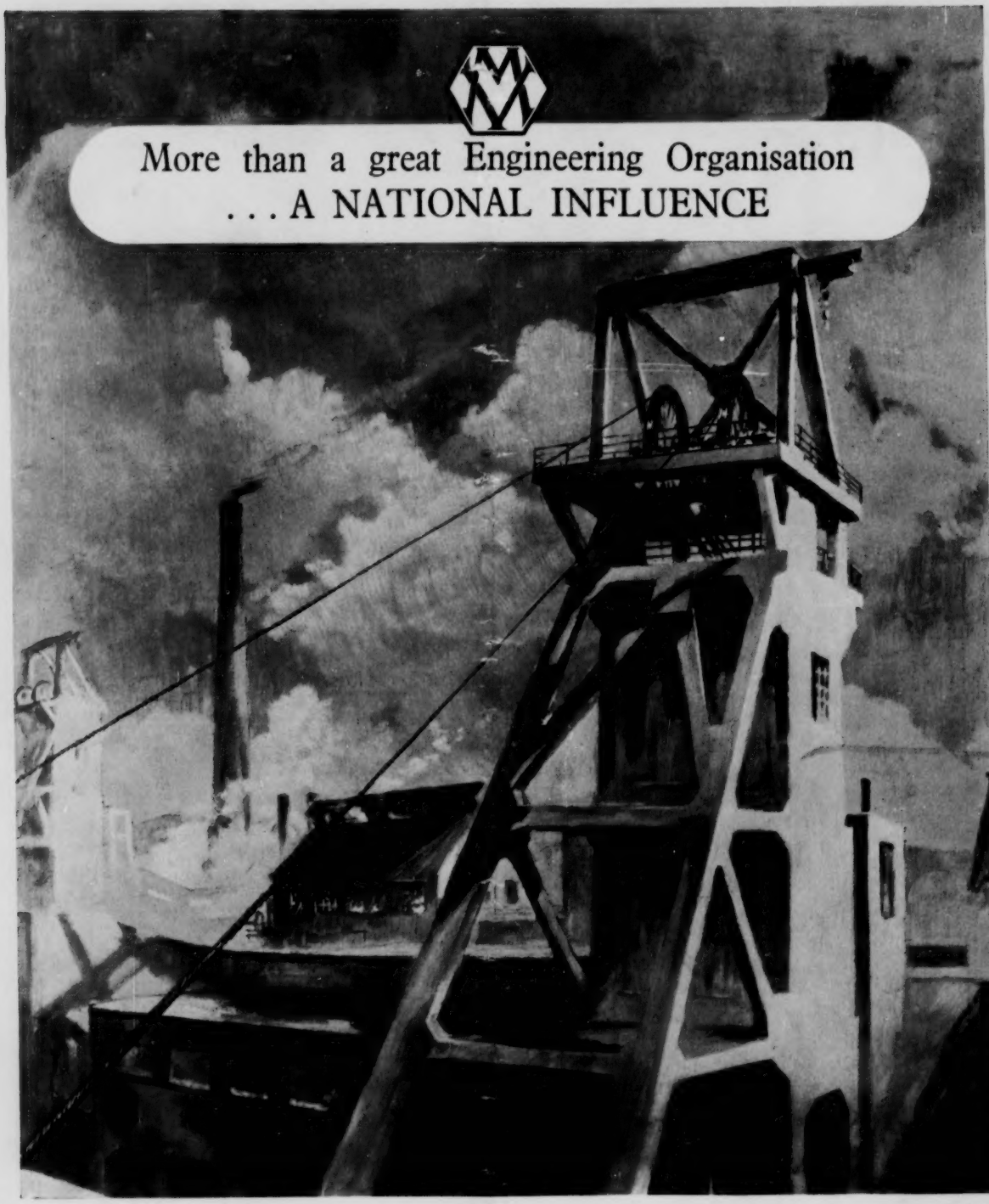

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